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. . . the challenge of standards in the steel industry — page 129

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Our Cover

Photo courtesy United States Steel Corporation

Molten steel flows from one of the 275-ton capacity open-hearth furnaces at Fairless Works of United States Steel near Morrisville, Pennsylvania. Performance specifications instead of specifications calling for manufacturing processes would give the steel industry more useful standards, says one of the industry's authorities on standards. (see page 129)

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In "The Challenge of Standards in the Steel Industry" (page 129), Dr John W. Sullivan of the American Iron and Steel Institute calls attention to the need for performance specifications, not process specifications. This is a problem that is not confined to the steel industry. It has long beset the building industry where process and materials specifications in building codes have at times held back new developments and prevented the use of better and cheaper methods and materials. It is also a problem in safety standards, in standards for pipe and fittings, for machine tools, and for textiles, to name only a few of the divergent fields in which performance specifications give better results than do standards for specific processes, materials, or products.

Dr Sullivan also calls attention to long delay in getting action on standards, another problem that frequently occurs in all standards work. It might be pointed out that some delay is inherent in the nature of standardization. Committee work is always time consuming—but unless standards are to be issued by edict and enforced through legal action, the most effective way to put standards to use is through the democratic work of committees. In committees, ideas are brought to light and different views exposed to each other until discussion rubs off the rough edges and they fit together. Committee men give their time in addition to their day-by-day company work; sponsor organizations have many responsibilities in addition to administration of committee activities; and the judicial function of the American Standards Association takes time. The judicial act of assuring that a consensus exists for every American Standard lies at the root of effective voluntary standards and unless it is carefully and effectively carried out voluntary standardization on a national and international level would wither and die.

Dr Sullivan's call for performance specifications and speedier action on standards, if heeded, can give all industry—not just the steel industry—better and more effective nationally acceptable standards.

Ninth National Conference on Standards

Hotel Roosevelt, New York
November 18, 19, 20, 1958

This Month's Standards Personality

ARCHIBALD T. McPHERSON, Associate Director of the National Bureau of Standards, is familiar with many aspects of standardization, including practical problems encountered when standards are put into everyday use. Standardization suffers most from those who enthusiastically advocate use of standards but fail to insure compliance by inspection and testing, he often says. In a recent paper on "Standards—Good and Bad" for the *Boletim de Metrologie* (Brazil), he sets up criteria to which standards should conform to be effective and beneficial. Most important of these is that requirements be expressed in numbers and be capable of verification by simple, well-defined methods of measurement.

Dr McPherson visited Rio de Janeiro in September 1957 as chairman of the U. S. delegation at the Inter-American Meeting of Experts on Standards under the auspices of the Organization of American States.

Dr McPherson has been a member of the staff of the National Bureau of Standards since World War I except for time spent in completing his doctorate at the University of Chicago and two years as instructor in Chemistry at Ewing Christian College, Allahabad, India. His first assignment was in gas chemistry. He has been successively a research chemist, chief of the Rubber Section, chief of the Division of Organic and Fibrous Materials, and associate director for Engineering.

He now has general oversight of the Bureau's work in Mechanics and Building Technology, and is responsible for Bureau-wide calibration and testing services. Here, his principal problems are to concentrate efforts on development of new standards and methods of test that the Bureau is uniquely qualified to undertake, and to encourage establishment and use of secondary standards laboratories. He also coordinates committee activities. Demand for Bureau participation in standards activities, national and international, is so great that on occasion he has ruled that no staff member shall belong to more than 40 committees and subcommittees at any one time. He himself is chairman of the Interdepartmental Screw Thread Committee.

While Government agencies are not members of ASA's Standards Council, Dr McPherson regularly attends the meetings as a liaison representative of the Department of Commerce.

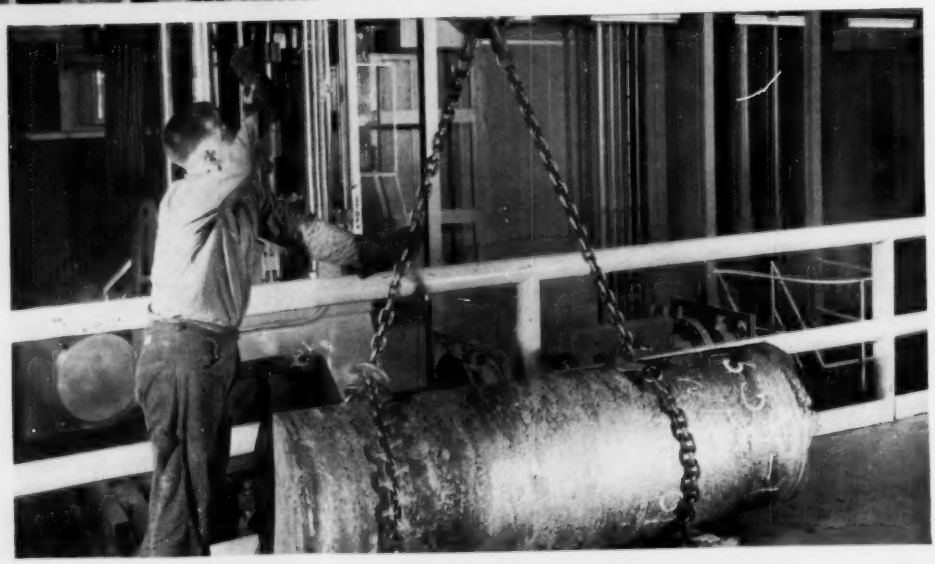
Dr McPherson is concerned with still a different type of standards activity as chairman of the Board of U. S. Civil Service Examiners at the National Bureau of Standards. This Board examines and certifies chemists, physicists, mathematicians, and various other physical scientists for appointment to some 50 Federal agencies in the Washington area. His interest in standards is also shown in emphasis on specifications and methods of test in his recent book, *Engineering Uses of Rubber.*

In recognition of Dr McPherson's encouragement of science talent in secondary schools, he was recently elected president of the Washington Academy of Sciences. The range of his interests is indicated by membership in the American Society for Testing Materials, American Chemical Society, American Physical Society, Society of Rheology, American Association for the Advancement of Science, Sigma Xi, Potomac Appalachian Trail Club, and Wilderness Society.

Allegheny Ludlum Steel Corp.

Photo by Charles Phelps Cushing

Producing super-alloy ingots. Left—Copper crucible being guided into new consumable electrode vacuum melting furnace at Watervliet Works, Allegheny Ludlum Steel Corporation, serves as mold for ingot of super-alloy. Below — 12,000 pound super-alloy ingot is crane-lifted from furnace area.



American Iron and Steel Institute

A test sample of steel is taken from an open hearth furnace. It is cast in a small "ingot" mold for quick laboratory analysis in controlling the steelmaking process.

The Challenge of Standards in the Steel Industry

by **John W. Sullivan**

Unnecessary specifying of manufacturing methods in steel standards and delay in developing standards are shortcomings that result in out-of-date specifications, says Mr Sullivan, metallurgical engineer, American Iron and Steel Institute.

IN THIS COUNTRY the steel industry's experience with product standards and standardization extends over half a century. During that period the industry has cooperated with the principal standardizing bodies in the United States. The resulting standards and standard specifications, and their wide acceptance, bear witness to the technical and economic advantages of standards.

However, there are shortcomings of a serious nature that must be overcome before the benefits of standards and standardization are fully achieved. This article is intended to discuss two of those shortcomings: (1) the unnecessary specifying of manufacturing methods in many quality standards for wrought steel products; and (2) the delay in establishing standards and standard specifications for wrought steel products.

Quality Standard. "Quality" is variously defined as, for example, "an attribute"; "a characteristic"; "class, kind, or grade."[1] One definition of "standard" is: "that which is established by authority, custom, or general consent, as a model or example; criterion; test."[2] Steel product standards are variously identified as, for example, standard,[3] tentative standard,[4] standard classification,[5] standard specification,[6] military specification,[7] federal specification,[8] and simplified practice recommendation ("standard of practice").[9] In the remainder of this article "standard" is used to include any or all of the foregoing identifications.

In this article "quality standard" means ranges or limits of readily measurable values of product characteristics or product performance which are either required or tolerated in the fabrication or ultimate use of the product, and which have been established as a standard by a standardizing body or a specifications-writing body.

The bulk of the quality standards for wrought steel (i.e., rolled steel and forged steel) collectively express the quality requirements in terms of measurable values of physical and mechanical properties, chemical composition, dimensions, and weight. In addition, those standards often contain quality requirements that, for economic or technical reasons, are difficult to evaluate by

means of numbers, such as steelmaking process, method of manufacturing the product, and finish, as well as tests that try to evaluate the internal condition of the steel in relation to its intended use.

Many standardizing bodies prepare standards for wrought steel. As one of them, the American Society for Testing Materials has considerable experience with steel standards. The author selected eleven groups of current ASTM standards (totaling 120) as examples of quality standards for wrought steel that are based essentially on measurable values of product properties.

Steelmaking Process Requirement. Of those 120 ASTM standards, 113 have a steelmaking process requirement, as summarized, by group, in Table 1.

TABLE 1
ASTM STANDARDS THAT INCLUDE A STEELMAKING PROCESS REQUIREMENT
Analyzed by Group and Product

Group	Product	No. of Stds in Group	No. of Stds Having a Steelmaking Process Requirement
1	Steel pipe	18	17
2	Steel tubes	19	19
3	Steel bolting material	10	10
4	Boiler steel plates and rivets	12	11
5	Structural and rivet steel	12	11
6	Sheet and strip steel	5	5
7	Bar steels	11	10
8	Steel rails, joint bars, track spikes, screw spikes, tie plates, track bolts and nuts	10	10
9	Steel forgings	9	9
10	Spring steel	10	10
11	Concrete reinforcement	4	1
Totals		120	113

Twenty-three of these 120 ASTM standards have been approved as American Standard in various editions.

Developments in steelmaking processes since World War II have outmoded the steelmaking process requirement in many standards. For many steel products the necessary fabrication and performance characteristics can be obtained from steel made by any of the following processes: basic open hearth, basic electric furnace, basic oxygen,[10] and acid bessemer.

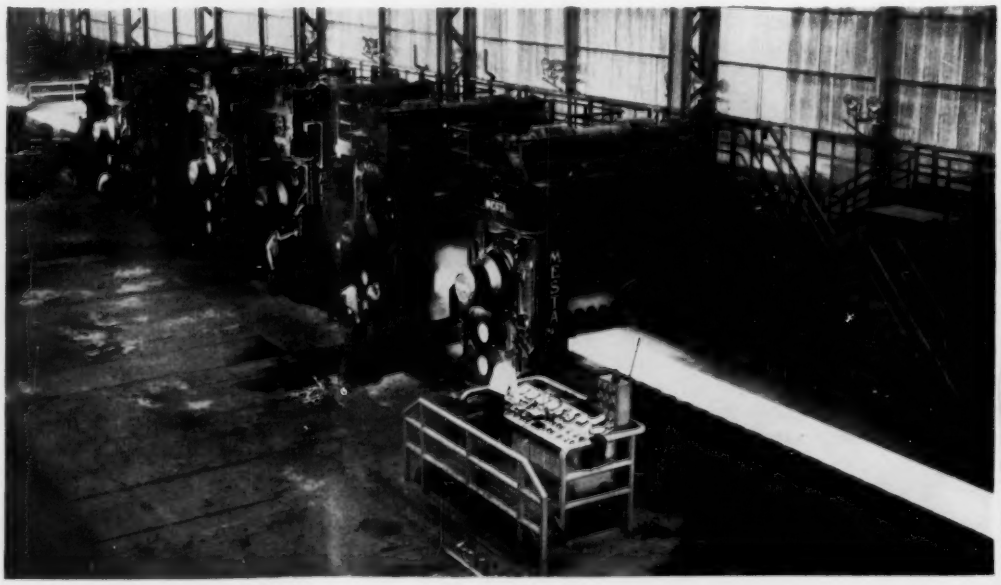
Although it may be debatable whether or not the steelmaking process is an essential requirement of each of the foregoing 113 standards, it is the author's opinion that the steelmaking process is not an essential requirement of any standard if the needed fabrication and performance characteristics of the product are adequately specified.

The steelmaking process requirement is not confined to ASTM standards. It appears also in the standards of many other standardizing bodies and specification-writing bodies, including the United States Government.

Manufacturing Requirements and Product Performance Characteristics. In contemporary standards for steel products, the steelmaking process requirement is sometimes accompanied by other manufacturing requirements, such as, for example, "pipemaking process," "tubemaking process," "boltmaking process," "manufacture of forging," and "The entire process of manufacture shall be in accordance with the best current state of the art."

The reasons for manufacturing requirements in standards include the technical point that some product characteristics have not been defined to the point where they can be measured and expressed in numerical terms. The reasons against manufacturing requirements recognize the same point, but in addition include the technical point that for many steel products the performance characteristics are adequately defined in terms of measurable attributes or by the equivalent of "conforming" or "not conforming" tests.

The objectives of some standards are bounded by two extremes: (1) only performance requirements; and



Hot sheet steel rushes out of six finishing stands of the 80-inch hot strip mill at U.S. Steel's Fairless Works. Speed from final stand (foreground) is up to 2300 feet per minute.

United States Steel Corp.

(2) only manufacturing requirements. One of the major problems of preparing standards is to avoid the inclusion of manufacturing requirements that are incompatible with the desired performance characteristics of the product. The "belt and suspender" approach of some standards that specify both the manufacturing requirements and the performance characteristics is very old.

In the ruins of an armorer's workshop in Tyre, Syria, uncovered in 1895, were found sword blades in several stages of manufacture and a copper tube containing a parchment inscribed with ancient Syriac characters, which directed the purchaser and producer to proceed, as follows:

LET THE HIGH DIGNITARY furnish an Ethiop of fair frame and let him be bound down, shoulders upward, upon the block of the God Bal-hal, his arms fastened underneath with thongs, a strap of goatskin over his back, and wound twice round the block, his feet close together lashed to a dowel of wood, and his head and neck projecting over and beyond the end of the block ... Then let the master-workman, having cold-hammered the blade to a smooth and thin edge, thrust it into the fire of the cedarwood coals, in and out, the while reciting the prayer to the God Bal-hal, until the steel be of the color of the red of the rising sun when he comes up over the desert toward the East, and then with a quick motion pass the same from the heel thereof to the point, six times through the most fleshy portion of the slave's back and thighs, when it shall have become the color of the purple of the king. Then, if with one swing and one stroke of the right arm of the master-workman it severs the head of the slave from his body, and display not nick nor crack along the edge, and the blade may be bent round about the body of the man and break not, it shall be accepted as a perfect weapon, sacred to the service of the God Bal-hal, and the owner thereof may thrust it into a scabbard of asses' skin, brazen with brass, and hung to a girdle of camel's wool dyed in the royal purple." [11] [12]

That specification contains 13 requirements for manufacture, identification, packaging, marking and loading, and 3 requirements for performance testing and injurious defects, as detailed in Table 2.

TABLE 2
REQUIREMENTS OF SPECIFICATION FOR DAMASCUS SWORD BLADE FOR OFFICER OR RULER OF HIGH RANK

Requirement	Specification Detail
	Manufacture
Cold working	"having cold hammered the blade"
Finish	"smooth"
Edge	"thin"
Heating medium	"fire of the cedarwood coals"
Heating atmosphere	"in and out" [of the fire]
Heating temperature	"the while reciting the prayer to the God Bal-hal"
Heating time	"until the steel be of the color of the red of the rising sun as he comes up over the desert toward the East"
Quenching medium	"Ethiop of fair frame" [and beef, for a delayed brine quench]
"Slavetemper" color	"color of the purple of the king"
	Performance Testing and Injurious Defects
Impact	"with one swing and in one stroke of the right arm of the master-workman it severs the head of the slave from his body."
Bending	"blade may be bent round about the body of the man and break not"
Injurious Defects	"display not nick nor crack along the edge"
	Identification, Packaging, Marking, and Loading
Identification	"sacred to the service of the God Bal-hal"
Packaging	"owner thereof may thrust it into a scabbard of asses' skin"
Marking	"brazen with brass"
Loading	"and hung to a girdle of camel's wool dyed in the royal purple."

As indicated above, since World War II, very significant technical developments have occurred in steelmaking and steel products manufacturing as well as in the development of tests for evaluating product characteristics. It is therefore appropriate for standardizing bodies and specification-writing bodies to reconsider the steelmaking process requirements of their standards.

Delay in Establishing Standards. The second shortcoming of standards and standardization is the delay in establishing standards.

Man-made standards ordinarily evolve from necessity, live by use, and die from lack of use. Man-made standards include steel product standards, many of which evolved through a slow process of acceptance by standardizing bodies. A few skipped that process when na-

tional emergencies necessitated immediate standardization by Government request or order.

The popular concept of a standard is something that is inflexible, unchanging, and lasting. Yet changing demands in the use of steel and the changing technology to meet those demands inevitably require flexible and changing standards if they are to remain alive in use. Consequently, there is ever present a time factor in establishing standards, identified as such, which must be shortened to the minimum to permit actual use of the standards before they are obsolete.

Standardization problems which confront the steel industry usually fall into three general groups: legal, technical, and economic. While the problems in each of those groups contribute to the over-all delay in establishing standards, the author wishes to discuss only the second group.

The technical problems of standardization include *(a)* planning the content of the standard so that the interested parties can be informed of the kinds and amounts of data that are needed to prepare the standard; *(b)* evaluation of those data; and *(c)* writing the standard in unambiguous language.

The largest amount of delay appears to occur in solving the technical problems of standardization. In the author's opinion much of that delay is due to "paperitis," parliamentarianism, and "pontification."

"Paperitis" is the belief that mere ownership of a library certifies familiarity with its contents, that progress in standardization can be measured by the amount of paper generated.

Parliamentarianism is adherence to the parliamentary form of procedure, including the three readings, and particularly to the opinion that "we should take another look at it."

"Pontification" is the dogmatic monolog, delivered ex cathedra, which must be "entered in the record." Often it is an undocumented objection to the standard.

It is likely that the time for establishing a standard can be significantly shortened by appropriate revision of standardization procedures.

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Seabees Hold Standardization Seminar

Insignia of the "Seabees," the U.S. Naval Construction Battalions.

TAKING THE INITIATIVE in what may become a development of great significance to our national Defense Standardization Program, the Davisville (Rhode Island) Center of the U. S. Naval Construction Battalions – briefly, the Seabees – recently organized a Standardization Seminar to be held at their base. Captain A .C. Husband, CEC, USN, is the commanding officer of the Center–"the Home of the Atlantic Seabees."

Dr John Gaillard, management counsel on standardization, was invited to act as the seminar leader and prepared the program for the five-day session held at the Davisville Center, March 31 through April 4, 1958. The CBC made arrangements for attendance by the members of its own Standardization Division–headed by its director, Edmund C. Pickard—and representatives from

the CBC on the West Coast whose base is at Port Hueneme, California. Moreover, taking the standpoint that the seminar would be of interest to all military units engaged in activities concerning the Defense Standardization Program, the CBC Davisville also extended an invitation to the Army and the Air Force. This invitation stated that the objectives of the seminar were "to provide a background of the history and philosophy of standardization and to show the relationship between the fundamental principles of standardization and their practical application to the Defense Department Program."

The Davisville seminar was attended by a group of 38 men, military and civilian, representing the following units: Office of the Assistant Secretary of Defense (Supply and Logistics); Bureau of Yards and Docks (3); Bureau of Aeronautics, Navy Department; CBC, Davisville (16); CBC, Port Hueneme (3); Headquarters, U. S. Air Force; Wright-Patterson Air Force Base (6); Air Research & Development Command, Andrews Air Force Base (2); U. S. Army Ordnance Corps; Engineering Command, U. S. Army Chemical Center, Maryland; Office of the Quartermaster General; Engineering Research & Development Laboratory, Fort Belvoir, Virginia; Transportation Research & Engineering Command, Fort Eustis, Virginia.

The program listed John J. Dunn, staff director, Standardization Division, Office of the Assistant Secretary of Defense (Supply & Logistics), for a talk on the basic philosophy and policies of the Department of Defense Standardization Program. However, Mr Dunn could not be present and his paper was read by Paul M. Boyland, the OASD, (S & L) representative at the seminar.

At a dinner held at the Officers Club, Naval Air Station, Quonset Point, on April 2, the guest speaker was Vice Admiral George F. Hussey, Jr, USN (Ret), managing director of the ASA, who reviewed the objectives, procedure, and achievements of the ASA, with special reference to its function as the national coordinating body serving both the Government and industry.

During the seminar the conferees were taken on a tour of the Davisville Center which gave them a most impressive picture of the Seabees' activities. Established in March, 1942, three months after the attack on Pearl Harbor, the Davisville Center has become a vital part of the Civil Engineer Corps (CEC) of the Navy. Seabee battalions, with Davisville as their homeport, are deployed in many parts of the world, either as complete units or as detachments. The Center considers it a singular honor to be associated with the Atlantic investigations of the International Geophysical Year. The Seabee-built bases, one of them right on the South Pole, are manned by 200 "Bees," carefully selected and specifically trained at Davisville where a similar group was prepared to relieve them early this year.

Even a brief tour of the Center's territory will show a visitor the vast and vital importance of standardization to the Seabees. Stowed within the confines of the Center are over 100 million dollars worth of material and equipment for ready use in building and maintaining overseas bases. Available for storing these mobilization reserve supplies are 8.7 million square feet of open storage space and 2 million square feet of covered warehouse space.

More than 100 million dollars worth of equipment and material are stored at the U.S. Naval Construction Battalion Center, Davisville, R. I., for ready use in building and maintaining overseas bases. (Official U.S. Navy photograph)

Running through these stockpiles are 22.6 miles of railroad track, part of which leads to the waterfront where two modern piers jut over 1000 feet into Narragansett Bay.

In addition to servicing equipment for Operation "Deep Freeze" and maintaining all equipment assigned to the Center, eleven thousand different pieces of major equipment are repaired here for the Atlantic Seabees. Hence, keeping down variety of items and maintaining interchangeability of components are among the problems of primary importance whose effective solution depends largely on the use of standards.

At the seminar sessions the various subjects on the program led to lively discussions, ranging all the way from debates on the interpretation of basic concepts — including definitions of the terms "specification" and "standard"—to technical arguments for and against the application and form of standards in a given field whose requirements are affected by the interests of the military activities concerned.

It appears that considerable progress in simplification, unification, and coordination of standards has already been made, Dr Gaillard reports. However, he also believes that many opportunities for getting the maximum benefit from standardization are still waiting. As in all cases where standardization is being introduced in a systematic way, he points out, the next step may well be to make arrangements for increased, continuous, and direct cooperation between groups having common interests in specific standardization problems and in the procedure by which such problems can be most effectively handled. In this respect, the basic approach to the general problem of standardization is the same, he says, whether we are dealing with private industry, with the Government, or with developments concerning both the Government and industry.

Dr Gaillard is convinced that the initiative taken by the CBC, Davisville, should serve as an excellent start for an effective plan of action to be developed for the purpose just indicated. Whatever form such a plan may take, the Davisville Center took a vital step in serving as the sparkplug in an undertaking of great value to the Defense Standardization Program.

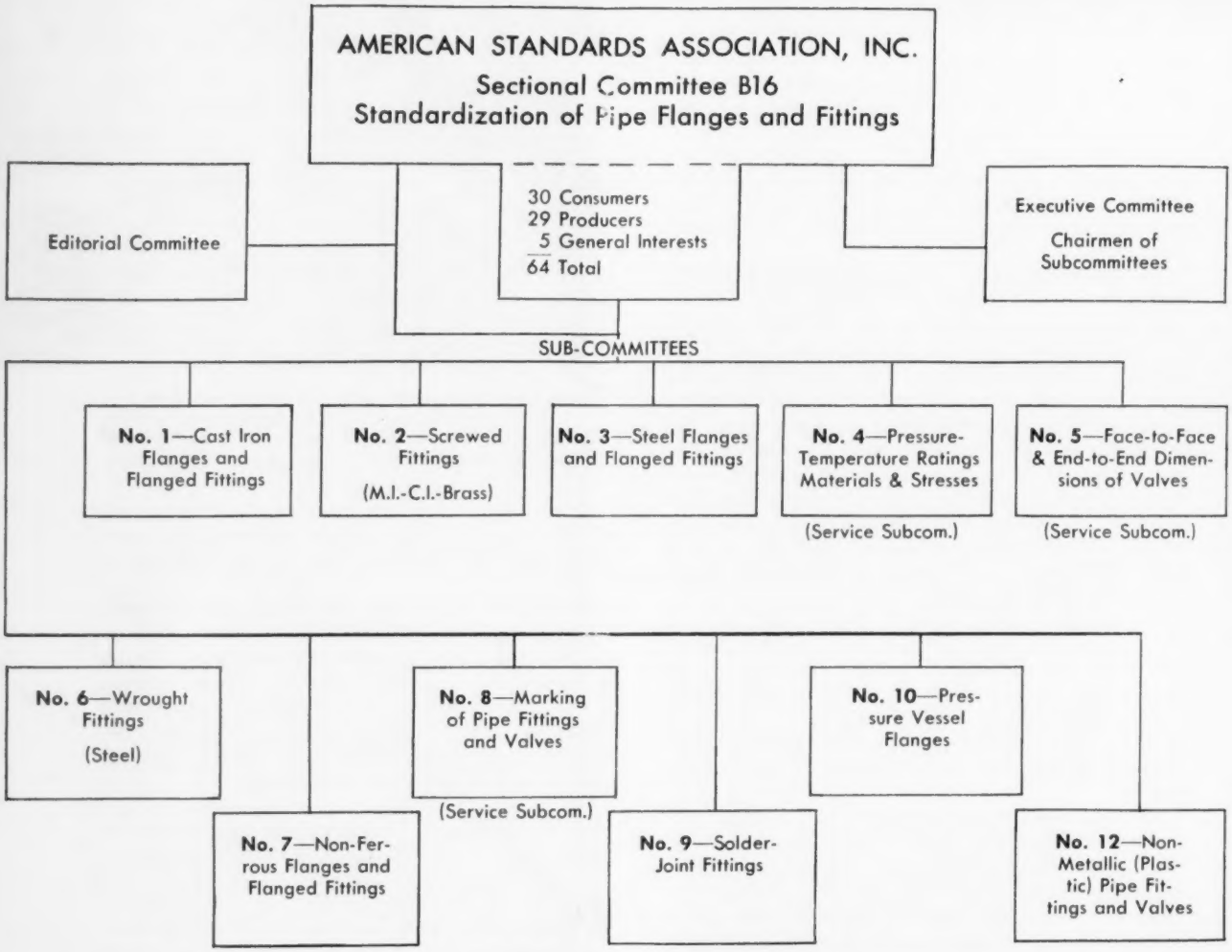
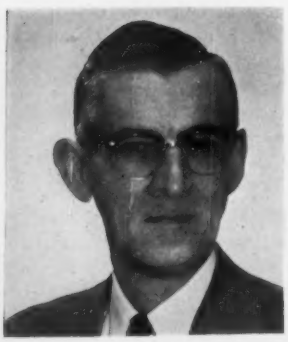


FIGURE 1 – Organizational chart of Sectional Committee B16, the American Standards Association Incorporated, which acts as a clearinghouse for manufacturers and users in the setting up of standards for the valve and fittings industry.



W. P. Kliment, *Engineer of Standards, Crane Company, and chairman of ASA Sectional Committee B16, has been associated with the valve and fittings industry for 35 years and active in standardization for 20 years. He has served as chairman of ASA's Company Member Conference, and member of the Standards Council, as well as chairman of technical and standards committees of the American Society of Mechanical Engineers and the Manufacturers Standardization Society of the Valve and Fittings Industry.*

Reprinted from Valve World, *Crane Company.*

DEVELOPMENT OF STANDARDS IN THE VALVE AND FITTINGS INDUSTRY

by **W. P. Kliment**

Engineer of Standards

The effect of standards is taken for granted, even though there is scarcely a single thing we do or commodity we use which is not affected by them. This article shows the procedural ramifications and technical knowledge that go into the preparation of valve and fittings standards; also the people, representing many interests, who are involved.

STANDARDS ON PRODUCTS of the valve and fittings industry are developed by many organizations. These standards are used in both the manufacture and the many applications of those products. The parent organization is the American Standards Association (ASA). The ASA acts as a clearinghouse for manufacturers and users who are working together to develop standards acceptable to both.

Further, in order to safeguard the judicial character of approval of standards, the ASA requires that the standard be vouched for by one or more of the Association's bodies. In valve and fittings standards, these organizations are the Manufacturers Standardization Society of the Valve and Fittings Industry (MSS), the Mechanical Contractors Association of America (MCAA), and the American Society of Mechanical Engineers (ASME). The ASME acts as the administrative sponsor. And the other two societies, representing the manufacturers and users, act as the endorsing sponsors.

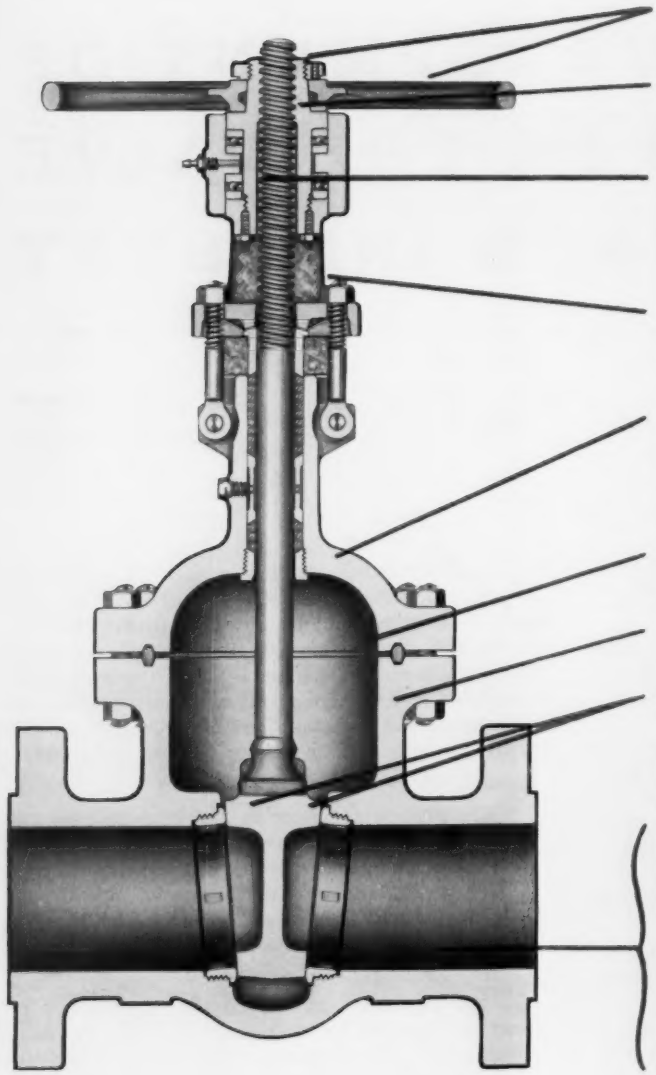
The processes under which standards are developed in ASA are known as the Sectional Committee and Existing Standards Methods. The latter is applied to standard practices documented and already in use and which have been developed by a particular industry, such as MSS. The Sectional Committee Method consists of a committee to develop one or more standards under an assigned scope. The majority of standards pertaining to this industry are developed in ASA Sectional Committee B16, Standardization of Pipe Flanges and Fittings.

The scope of this committee reads:

> "Designation of materials and pressure-temperature ratings of pipe flanges, pipe and tube fittings (not including SAE machinery fittings), and valves; and standardization of dimensions for pipe flanges, pipe and tube fittings (not including SAE machinery fittings), and for face-to-face and end-to-end of valves."

To the uninitiated, this scope may not indicate its broad coverage nor the many facets of the piping field. So that we may have a better understanding of the functions of this committee and the products assigned to this group, along with its many ramifications, a study of the organization necessary to handle this project is in order. Figure 1 shows the method (ASA Sectional Committee Method), and the number of participants involved, in developing standards for the valve and fittings industry. A committee is composed of representatives accredited for their knowledge by the various groups concerned with the product. In addition, those individuals who are

Principal Specifications and Standards Involved in Design and Production of Steel Gate Valves



CUTAWAY VALVE showing a number of the standards and specifications involved in its manufacture.

ASTM A-197, Cupola Malleable Iron

Crane 48 Nickel Alloy

ASTM A-182, Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.

ASA B18.2, Square & Hexagon Bolts & Nuts.

ASTM A-216, Carbon-Steel Castings Suitable for Fusion Welding for High-Temperature Service.

ASA B16.20, Ring Joint Gaskets & Grooves for Steel Pipe Flanges.

ASA B1.1, Unified & American Screw Threads for Screws, Bolts, Nuts, & other Threaded Parts.

ASTM A-182, Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.

ASTM A-216, Carbon-Steel Castings suitable for Fusion Welding for High-Temperature Service.
ASA B16.5, Steel Pipe Flanges & Flanged Fittings.
ASA B16.10, Face-to-Face Dimensions of Ferrous Flanged & Welding End Valves.
MSS SP-6, Finishes for Contact Faces of Connecting End Flanges of Ferrous Valves & Fittings.
MSS SP-9, Spot Facing
MSS SP-25, Standard Marking System for Valves, Fittings, Flanges & Unions.
MSS SP-45, Bypass & Drain Connection Standard.

especially qualified serve as members-at-large when requested.

Note that there are nearly 65 individuals who guide or act as consultants in developing these particular standards. These men represent 36 engineering societies, trade associations, governmental bodies, and foreign standardization groups. They do not necessarily voice their own opinions, but rather those of the users or manufacturers whom they represent. In the valve and fittings industry the number runs into thousands. The special value of the Sectional Committee Method is the advance provision that a consensus of its members will be assured when all the members have approved the completed assignment.

The work is assigned to several subcommittees. Personnel of the subcommittees consists of people who are recognized authorities in the field related to their specific assignment.

Eight subcommittees are assigned definite product standards or assignments. In addition, there are three service subcommittees which act in an advisory capacity. The standards charged to these subcommittees, and constantly revised or reaffirmed by them, are:

Subcommittee No. 1, Cast Iron Flanges and Flanged Fittings
- *B16b –Cast-Iron Pipe Flanges & Flanged Fittings, Class 250
- B16b1 –Cast-Iron Pipe Flanges & Flanged Fittings (for 800-lb Hydraulic Pressure)
- B16b2 –Cast-Iron Pipe Flanges & Flanged Fittings (for Maximum WSP of 25 lb)
- *B16.1 –Cast-Iron Pipe Flanges & Flanged Fittings, Class 125
- B16.16–Cast-Iron Flanges & Flanged Fittings for Refrigerant Piping, Class 300
- B16.21–Nonmetallic Gaskets for Pipe Flanges

Subcommittee No. 2, Screwed Fittings
- B16.3 –Malleable-Iron Screwed Fittings, 150-lb
- B16.4 –Cast-Iron Screwed Fittings, 125 and 250 lb
- B16.12–Cast-Iron Screwed Drainage Fittings
- *B16.14–Ferrous Plugs, Bushings, and Locknuts with Pipe Threads
- *B16-15–Brass or Bronze Screwed Fittings, 125 lb
- *B16.17–Brass or Bronze Screwed Fittings, 250 lb
- B16-19–Malleable-Iron Screwed Fittings, 300 lb

Subcommittee No. 3, Steel Flanges and Flanged Fittings
- B16.5 –Steel Pipe Flanges and Flanged Fittings
- B16.20–Ring-Joint Gaskets and Grooves for Steel Pipe Flanges

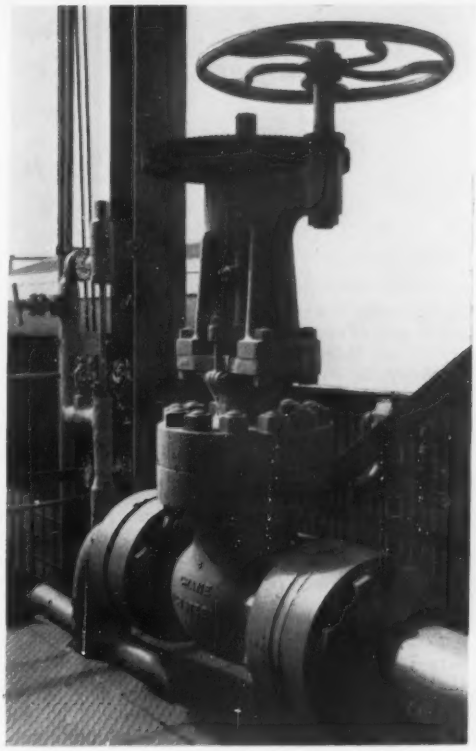
Subcommittee No. 5, Face-to-Face & End-to-End Dimensions of Valves
- B16.10–Face-to-Face Dimensions of Ferrous Flanged & Welding End Valves

Subcommittee No. 6, Wrought Fittings—Steel
- *B16.9 –Steel Butt-Welding Fittings
- B16.11–Steel Socket-Welding Fittings
- *B16.25–Butt Welding Ends

Subcommittee No. 7, Non-Ferrous Flanges and Flanged Fittings
- B16.24–Brass or Bronze Flanges and Flanged Fittings

Subcommittee No. 9, Solder-Joint Fittings
- *B16.18–Cast-Brass Solder-Joint Fittings
- *B16.22–Wrought Copper and Bronze Solder-Joint Fittings
- *B16.23–Cast-Brass Solder-Joint Drainage Fittings

*Under revision



TYPICAL PLANT installation of a steel valve. Considerably more than 40 standards affected its design, production, and service.

In addition to the above existing standards, it should be emphasized that new standards are under consideration and being developed by the respective subcommittees. A good example are standards on nonmetallic (plastic) pipe, fittings, valves, and pressure vessel flanges. This need for new standards is at the suggestion of both users and the manufacturers to meet new developments in industry.

Another new field, that of nuclear energy, is being explored with the thought of developing standards for simplifying its application. However, this is another chapter in "Standardization" which will have to await wider use of atomic energy in our everyday living.

At this writing the above standards marked with an asterisk (*) are under revision. In many instances several proposed drafts were considered by the various groups in order that those having a substantial interest in their scope could reach an agreement. By cooperation and arbitration among users, manufacturers, and general interests, this form of democratic documentation is achieved and disseminated to the mutual benefit of all concerned.

Most recently published American Standards in the B16 series are Steel Pipe Flanges and Flanged Fittings, B16.5-1957, and Brass Fittings for Flared Copper Tubes, B16.26-1958

Cooperation | Key to New Flange Design Methods

by **Meade McArdle**

Mr McArdle is with the Olin Mathieson Chemical Corporation, and is chairman of Subcommittee No. 10 on Pressure Vessel Flanges of ASA Sectional Committee B16, Standardization of Pipe Flanges and Fittings.

COOPERATION MARKS the current American Standards Association project destined to provide dimensional standards for pressure vessel flanges. It is this cooperation which has already provided the Graphical Design Procedure for Bolted Flange Connections (Lap Joints) published by and available from the Manufacturing Chemists' Association, Inc.[1] But all of this is getting ahead of the story.

Certainly the American Standards Association was cooperating with the Manufacturing Chemists' Association back in 1949 when a Chemical Industry Advisory Board (CIAB) was formed to represent the interests of the chemical industry in the field of standards. And the chemical companies responded, too, by backing the work of CIAB and its subcommittees. One of these was the Subcommittee for Unfired Pressure Vessel Codes. It was this subcommittee which tackled the flange design problem and uncovered the confusions, inconsistencies, high costs, and seemingly endless variations in pressure vessel flanges. Support by industry was forthcoming, and engineering funds were granted by both Monsanto and du Pont to study the problems and apply at least a degree of control; and, if possible, to create dimensional standards for acceptance by the industry. This cooperation has already produced Manual Sheet M-1, the Graphical Design Procedure previously mentioned.

The Manual itself is an attractively prepared, easily-used booklet, containing 33 pages of design information, charts, and graphs for solving the ASME code formulas for pressure vessel flanges. It includes a sample calculation sheet which may be reproduced in quantities for the design engineer. It is of interest to both the experienced designer and the young engineer getting his first initiation into the ofttimes bewildering problem of designing a pressure vessel flange of proper proportions.

The use of the graphical design procedure requires, first, the definition of the problem. That is to say, the vessel size, design pressure, design temperature, choice of materials of construction, and gasket type must be known. The next step is to calculate four simple ratios which are the design parameters. These are concerned with gasket yield strength and design pressure, allowable working stress in the tank and design pressure, and the relation of the allowable working stress for the bolts, flanges, and vessel walls. After this, the graphs are consulted to determine flange proportions, bolt size and number, and flange thickness. A complete design by this method requires a matter of minutes, and a series of solutions may be made to determine the most suitable flange in less time than is required to prepare the first trial design using formulas and the slide rule.

Use of the manual does more than simplify calculations, for incorporated in the charts are a series of limiting proportions which guide the user into flanges which meet code requirements, are leak tight, and are economical. And where did these proportions come from? Again from cooperation, this time from the engineering departments of Carbide and Carbon, Tennessee Eastman, Olin Mathieson, American Cyanamid, Travelers Indemnity, du Pont, and Monsanto. These companies were represented on the CIAB subcommittee which devoted several years time to collecting and correlating information concerning the most desirable flange proportions.

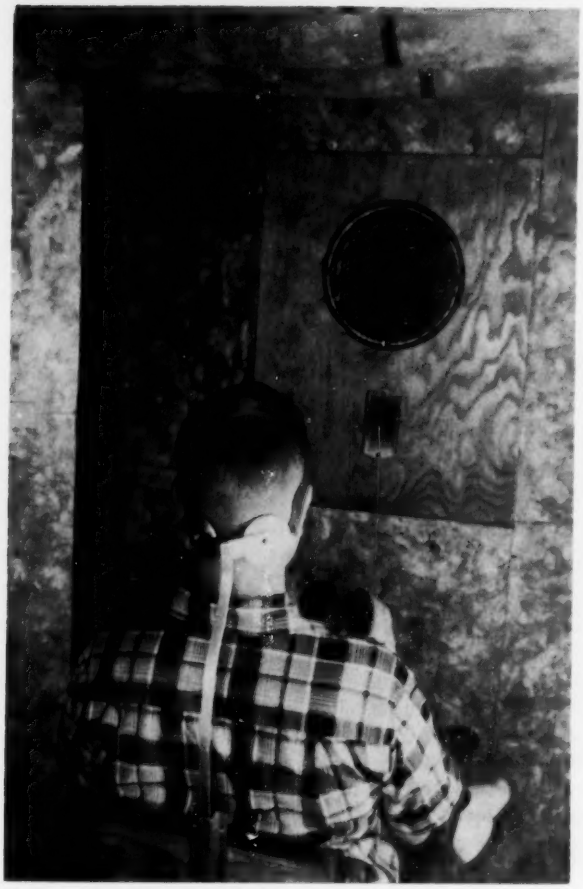
The Manual Sheet covers the lap joints only. This was done for a good reason. If lap joint bolt circles could be held in tight enough, the same bolt circles could be used for the welded-on flanges and a real victory for standardization would be achieved. And this is the way it seems to be working out.

After the Graphical Design procedure was developed by the subcommittee, it was transmitted to the present CIAB committee who presented it to the MCA with the recommendation that it be published and made available to the industry at large. MCA was cooperative and issued Manual Sheet M-1. If the industry demand is great enough, MCA will undoubtedly issue another Manual Sheet covering the welded-on flanges, since the engineering work has been completed by the subcommittee and is available for printing.

MCA also took another important action. Through CIAB they requested the American Standards Association to support the development of dimensional standards for pressure vessel flanges. Following established procedures, ASA called a General Conference last spring, determined that American industry supported the proposal, and assigned the task to ASA Sectional Committee B16. Within B16, subcommittee No. 10 was established to prepare the dimensional standards for nationwide acceptance.

So, relatively few engineers, backed by their companies and the American Standards Association, will prepare a dimensional standard for pressure vessel flanges which will be of great value to the entire industry. And, in addition to the personal satisfaction gained from creating a much needed standard, they will realize that they are not alone in this work—that other engineers and companies and associations are cooperating to create other standards for the benefit of all.

[1] Manufacturing Chemists' Association, Inc, 1625 Eye Street, N. W., Washington, D. C.



Photo—Western Electro-Acoustic Lab.

Ear plugs are here being tested in soundproofed semi-free field room at Western Electro-Acoustic Laboratory in accordance with American Standard Z24.22-1957. In test, listener faces loundspeaker with head fixed in a head-positioning device. First, with ears uncovered he changes control until tone is just audible, to check the reference threshold of audibility. While a constant noise is maintained at a standard sound pressure level, he inserts earplugs or puts on earmuffs, and manipulates ear protectors until noise appears minimal. After he adjusts ear protectors by moving his jaw and turning his head from right to left ten times, the background noise is turned off and a threshold of audibility for the test sounds is measured in the same way as the reference threshold was measured. The real-ear attenuation at threshold is the mean difference in decibels between the test threshold and the reference threshold.

How Good Is An Ear Protector?

by **Ira J. Hirsh**

Dr Hirsh is head of the Psychology Laboratory at the Central Institute for the Deaf, and associate professor of psychology at Washington University, St Louis, Missouri. He was chairman of Writing Group Z24-W-26 that prepared the American Standard Method for the Measurement of Real-Ear Attenuation of Ear Protectors at Threshold, Z24.22-1957. This was a subgroup of Sectional Committee Z24, Acoustics, Vibration, and Mechanical Shock, sponsored by the Acoustical Society of America. This committee has now been reorganized and revisions of American Standard Z24.22-1957 will be handled by the new Sectional Committee S3, Bioacoustics. This committee is also sponsored by the Acoustical Society of America.

IT IS NO longer necessary to call attention to the social, psychological, medical, and economic importance of some of the noisy industrial and military environments in which people must work. By now more attention is being directed at doing something about the noise problem. To be sure, the most effective weapon is reduction of the noise at its source or in the environment between the source and people who are exposed to it. But even after suitable procedures of noise control have been instituted, some places still have too much noise. The further step that can be taken is to provide individuals with some form of personal ear protection.

The development of devices designed to prevent noise from reaching a person's ear has gone on for many years. Consequently, there is a large variety of ear protectors available from which any organization can choose a particular device for use by its personnel. But the choice of an ear protector is a complicated matter because there are several factors that enter into the decision. First of all, a good ear protector must be able to reduce the noise level that is found around an individual so that it is substantially less by the time it reaches the eardrums. Second, the device must be comfortable enough so that the wearer will tolerate its use for relatively long periods of time. Third, the material of which the ear protector is made must be such that it will not have toxic properties that will cause skin irritation or disease where it comes

in contact with the skin of the ear canal or the skin of the head around the ear.

Along with recognition of these various factors, consumers in industry and in the Department of Defense[1] requested some kind of standard procedure that would render comparable measurements made at different places by different people. At the time of these requests, for example, a particular earplug would be reported as having a certain amount of attenuation at various frequencies according to measurements in one laboratory and as having quite different amounts at another laboratory. Differences in procedure even might account for the fact that one earplug would be judged better than another at one place but just the opposite result might be found in another.

We were fortunate in being able to assemble in the writing group people from a variety of disciplines — people who had worked in the development of earplugs, people who knew about physical tests and psychological tests, and people who were familiar with problems of the use of ear protectors in the field. In the beginning of our discussions, it was decided that the second and third factors mentioned above, namely, comfort and toxicity, did not lend themselves to standardized test procedures at the present time. We turned our attention, therefore, to working out a standard procedure for evaluating how much noise reduction was brought about by a particular ear protector.

Even this simplification of our task did not produce an easily soluble problem because we wanted the procedure to cover the three basic types of ear protectors that are currently in use: (1) earplugs, which are inserted into the ear canal; (2) earmuffs, which are worn over the ears and are usually connected by some kind of spring headband; and (3) helmets, which may have been designed for other purposes, such as communication, but which also may have protective functions.

The desire to have the standard cover these kinds of ear protectors was one of the reasons why we resorted to a psycho-physical testing procedure that would use live human listeners. To be sure, a physical testing procedure could be more easily standardized and, actually, several methods have been worked out whereby a model of the ear canal is used with the earplug to be tested in place. The resulting measurement is the difference between the noise level at the entrance to this artificial canal and the noise level at the other end of the canal, beyond the earplug. Results obtained with such a device appear to be quite reliable but there is not sufficient evidence on the validity of such measurements; that is, we do not know how much noise reduction would be obtained in a real ear, given information on the noise reduction in the artificial ear. Then, too, a new kind of model would have to be used for the other kinds of ear protectors.

[1]Requests from the Defense Department for a standard procedure were received by the Armed Forces National Research Council Committee on Hearing and Bioacoustics. This advisory group asked the American Standards Association Writing Group Z24-W-26 to serve also as a Working Group for this committee (CHABA). The procedures in the new American Standard Z24.22-1957 have already been transmitted through CHABA to the Armed Forces and, therefore, it is hoped that the same procedures will be used within the Armed Forces as will be used in industry for the testing of various kinds of ear protectors.

The new standard proposed to examine the effectiveness of an ear protector, essentially in terms of its ability to give its wearer an artificial hearing loss. Basically, we look at the ear protector as an acoustic attenuator and we ask how much worse is the listener's hearing when he wears his ear protector than it was originally. The procedure consists of measuring the minimum acoustic energy that is required in order for a listener to just hear pure tones at different frequencies and then measuring these thresholds again with the ear protector in place. The difference between the two thresholds gives us an estimate of the acoustic attenuation or noise reduction that is introduced by the ear protector.

The fact that human listeners are to be used as the measuring indicators in this standard procedure requires certain precautions to be taken. In the first place, since the sizes and shapes of people's ear canals and heads are different, we cannot be satisfied with tests made on only one person. The standard recommends a sample of at least ten persons. The variability in fit, even on one person, from time to time requires that we not be satisfied with only one measurement on each person. The standard recommends at least three separate occasions. Furthermore, we know that earplugs and earmuffs are moved slightly as a person goes through his normal activities and, therefore, the standard requires certain jaw and head movements to be made by the listener after the ear protector is installed, before the threshold tests begin.

There are also some relatively stringent requirements about the testing environment. First of all, it must be quiet enough so that the thresholds measured can be truly quiet thresholds and not thresholds that are affected by noise masking. Second, the room must be free of echoes so that when a sound is generated by a loudspeaker, its intensity at the listener's position can be easily specified.

This new standard, then, tells us about the attenuation characteristics of an ear protector when it is worn on a head or in an ear canal that is typical of at least ten listeners. Even this measurement will not tell us exactly how it will perform in the presence of high-intensity noise but we are relatively sure that it will give us a measurement on the basis of which several ear protectors can be ranked with respect to their attenuation characteristics. Furthermore, if it is known that a noise level of x decibels (db) exists near a worker and it is also known from these tests that a particular ear protector has a real-ear attentuation of y db at a certain frequency, then for the purposes of evaluating the noise level that will actually affect the man's ear, we can predict its level to be $x - y$ db.

Users of ear protectors must recognize that this measurement of attenuation, which is now available from standard test procedures, is only one, although an important, factor to be weighed against others in a decision concerning the choice of an ear protector. Measurements resulting from this standard test procedure will tell you how good an ear protector is as an acoustic attenuator, but they cannot predict how often or how long it may be worn, nor can they tell you how comfortable it will be or whether it will maintain its proper position. The choice is still a complex one but the new standard at least makes one important piece of information available from a standardized test procedure.

Two Important International Meetings . . .

IEC, Stockholm

Stockholm, Sweden will be headquarters for the annual meeting of the International Electrotechnical Commission, July 8-17, this year. A total of 54 technical committees and subcommittees will meet at Stockholm, Ludvika, and Vasteras, Sweden, to discuss international standardization in electrical engineering. In addition, three committees (safety in radio-communication, electric cables, and primary cells and batteries) will meet in Copenhagen, Denmark, July 1-4.

More than 25 delegates have already registered as representatives from the United States, and it is expected that approximately 75 will be registered before June 1. This announcement was made by Richard C. Sogge, manager, Standards Engineering, General Electric Company, New York. Mr Sogge is president of the United States National Committee of IEC, which is affiliated with the the Electrical Standards Board of the American Standards Association.

Delegates will be guests of the Swedish National Committee of IEC, Svenska Elektriska Kommissionen. The Danish National Committee and the Danish Electrotechnical Committee will entertain the delegates who attend the meetings in Denmark.

Technical visits have also been arranged. Delegates will have an opportunity to visit the Asea Works in Ludvika and Vasteras, a leading Swedish mining and paper company founded in the 13th century, hydroelectric power stations in northern Sweden at Namforsen, Kilforsen, and Lasele along the Angermanalven, the high-voltage converter station on the island of Gotland, and a number of other factories, power, and telecommunication plants. In Denmark they are invited to visit Hellesens Ltd dry cell factory and the Northern Cable and Wire Works at Vibeholmen.

The Charles le Maistre Memorial Lecture will be given by Professor Dr R. Vieweg, Germany, at the Technical Museum, Stockholm.

Delegates to the meetings in Sweden will be welcomed at an opening ceremony at the Royal Institute of Technology, and at a reception given by the City of Stockholm at the City Hall.

Special trips and social events have been arranged for the ladies.

Officers of the U.S. National Committee of IEC are Mr Sogge, president; Hendley Blackmon, Westinghouse Electric Corporation, and Virgil Graham, Electronic Industries Association, vice-chairmen. S. David Hoffman, American Standards Association, is secretary, and Vice Admiral G. F. Hussey, Jr, USN (Ret), managing director of ASA, is treasurer.

The committees and subcommittees that are meeting in Sweden and Denmark are: Nomenclature; classification of insulating materials; dimensions of carbon brushes; graphical symbols; aluminum; aluminum alloys; standard voltages – current ratings; measuring instruments; integrating meters; indicating instruments; electronic measuring instruments; power transformers; insulating materials; dielectric strength; volume and surface resistivity—insulation resistance; tracking; voltage endurance under the action of ionization discharges; encyclopedia of insulating materials; dielectric constant and losses; temperature properties of insulating materials; switchgear and controlgear; high-voltage switchgear and controlgear; low-voltage switchgear and controlgear; power converters; semi-conductor rectifiers; electrical accessories; electric and magnetic magnitudes and units; letter symbols and signs; coordination of insulation; electroacoustics; sound recording; sound systems; loudspeakers; hearing aids; ultrasonics; sound level meters; lightning arresters; instrument transformers; electronic tubes and valves and similar semi-conductor devices; sockets and accessories for electronic tubes and valves; components for electronic equipment; capacitors and resistors; R.F. transmission lines and their accessories; connectors and switches; basic testing procedure; parts made of ferromagnetic oxides; high-voltage testing techniques; IEC Committee of Action; IEC Council.

The International Organization for Standardization's Technical Committee 43 on Acoustics will also hold a meeting from July 14-18 at Stockholm so that the delegates attending the related IEC Technical Committee on Electroacoustics will be able to participate in the TC 43 meetings also.

ISO, Harrogate

Some 60 delegates will represent the United States at meetings of 15 technical committees, the ISO Council, and General Assembly of the International Organization for Standardization at Harrogate, England, June 9-21.

ASA's delegates at the Council and General Assembly will be the Association's president, H. Thomas Hallowell, Jr, president of the Standard Pressed Steel Company; ASA vice-president, John R. Townsend, special assistant to the Assistant Secretary of Defense (Research and Engineering); Vice Admiral W. A. Kitts, 3rd, USN, (Ret), director, Product Planning, General Electric

Company, member of ASA's Board of Directors; and Vice Admiral G. F. Hussey, Jr, managing director.

A new ISO president is to be elected, and three Council members to replace Sweden, Belgium, and USSR, whose terms have expired.

USA delegates attending the technical committee meetings will be technical experts from the industries concerned.

Proposed recommendations presented by the USA, consisting of a complete, unified inch series of screw threads, will be taken up in the meeting of ISO/TC 1, Screw Threads. These offer a more thorough coverage than in previous drafts, since for the first time they include the numbered sizes below ¼ in. Roy P. Trowbridge, General Motors Corporation, will be chief chief delegate.

Specifications and methods of test for iron castings will be discussed by ISO/TC 25, Cast Iron.

Classification of copper and wrought copper alloys will be among the important subjects considered by TC 26, Copper. The USA has submitted a number of proposals based on ASTM standards. Five USA delegates will attend.

Technical Committee 27 on Solid Mineral Fuels is working on a very active program. Four delegates under the leadership of Dr Orin W. Reese, Illinois State Geological Survey, will attend. Methods of testing and sampling coal and coke will be considered.

Alloy classification and test methods for aluminum will be under consideration by Technical Committee 79, Light Metals. The American Standards Association will be represented by L. H. Adam, U. S. Department of the Army, Frankford Arsenal, Philadelphia, and by John C. Millson, Aluminium Laboratories, Ltd, Kingston, Ontario. Mr Millson will also represent the Canadian Standards Association.

Three subcommittees of Technical Committee 85, Nuclear Energy, are scheduled to meet. These are to consider terminology, units, and symbols, reactor safety, and radiation protection. Morehead Patterson, president and chairman of the Board, American Machine and Foundry Company, will serve as chairman of the TC 85 meeting. Mr Patterson is chairman of the ASA Nuclear Standards Board. Vice Admiral W. A. Kitts will be chief delegate for ASA. Henry Lamb, secretary of the ASA Nuclear Standards Board, and safety engineer on the ASA staff, is also attending these meetings.

A delegation of some nine members will take part in the work on photography and on cinematography, ISO/TC 42 and ISO/TC 36. Questions discussed will include packaging of sensitized photographic materials; dimensions for stereo still pictures on 35mm film; method for indicating the stability of the images of processed black-and-white films, plates and papers; and a method of identifying exposed color roll film. A series of recommendations on photographic chemicals will also be considered.

Wide screen pictures, marking of safety motion picture film, and magnetic sound reproduction characteristics will be among the subjects considered by ISO/TC 36, Cinematography. The committee's work on sound recording will also be reviewed. J. W. McNair, technical director of the American Standards Association, and secretary of the Photographic Standards Board, will be at these meetings.

A. W. Meyer, director of Patent and Engineering Investigations, Brown and Sharpe Manufacturing Company, Providence, R. I., will be the USA delegate to the meeting of ISO/TC 39, Machine Tools. The committee will take up questions concerning tapers for tool shanks, centers for lathes or other machine tools, lathe tool posts, T-slots for machine tools, and machine tool speeds and feeds.

Technical Committee ISO/TC 56 on Mica will cover various problems concerning both muscovite and phlogopite mica, including methods of grading and classification. The group is collecting standard samples which will show both the allowable impurities and the desirable qualities of mica.

Of these committees, the USA holds the secretariat for Technical Committees 85, nuclear energy; 42, photography; 36, motion pictures; and 26, copper.

Other technical committees meeting at Harrogate, in which the USA is not participating, are Technical Committee 17, steel; TC 51, pallets; TC 52, sealed food containers; and TC 64, fuel-using equipment.

During the ISO meetings, technical trips to industrial plants of special interest to the individual technical committees are being planned. The delegates will be welcomed by the Mayor of Harrogate at Royal Hall. Entertainment will include an all-day Sunday bus trip to Fountains Abbey and the Yorkshire moors.

In addition to the meetings at Harrogate, ISO Technical Committee 4 on Ball and Roller Bearings is holding a series of meetings the end of May and early June at Naples, Italy, and STACO, ISO Standing Committee for the Study of Scientific Principles of Standardization, meets June 25-28 at Amsterdam.

ASA Sectional Committee B3, Ball and Roller Bearings, met April 22 to go over plans for the TC 4 meetings and to instruct its delegates. Delegates will be H. O. Smith, secretary-manager, Anti-Friction Bearing Manufacturers Association; J. M. Bryant, chief engineer, Link Belt Bearings Division; Gunnar Palmgren, vice-president, engineering, SKF Industries; H. D. Stover, Patent and Engineering Research, Timken Roller Bearing Company; T. E. Rounds, vice-president, Barden Corporation. J. W. McNair, ASA technical director, will attend the meetings of Technical Committee 4, as well as the STACO meetings.

A series of Working Group meetings will prepare for the plenary meeting of TC 4.

Working Group 1, Identification Code. (Mr Bryant, USA, is chairman.) The work of this group is in close harmony with work going on in the USA.

Working Group 3, Load Ratings. (USA is participating.) Two draft ISO recommendations are out for approval by ISO member-bodies.

Working Group 4, Tolerances. (USA is participating.)

Working Group 5, Taper Roller Bearings. (Mr Stover, USA, is chairman.) At its meeting April 22, Sectional Committee B3 approved a counter proposal "Metric Series Tapered Roller Bearing Boundary Plan" to be presented by the USA to ISO Technical Committee 4 in place of a metric series now being considered for approval as ISO Recommendation. The committee is recommending that the ISO Draft Recommendation be rejected.

Working Group 6, Instrument Bearings. (Mr Rounds, USA, is chairman.) A proposed draft submitted to TC 4 by the USA and now being considered is identical with Proposed American Standard B3.10.

A new Subcommittee 3, Airframe Bearings, will hold its first meeting at Naples. This activity stems from work in Technical Committee 20 on Aircraft, which referred its problems on bearings to ISO/TC 4. The secretariat of Subcommittee 3 has been assigned to the United Kingdom, which also holds the secretariat for TC 20. Thus, close liaison is maintained between the two committees. The USA has submitted a proposal on airframe bearings and tolerances to Subcommittee 3 for consideration. Other proposals are also before the committees, including one from the Netherlands. At its Naples meeting, the subcommittee will study the recommendations and determine what its activities will cover.

FROM OTHER COUNTRIES

Members of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. Titles are given here in English, but documents are in the language of the country from which they were received. An asterisk * indicates that the standard is available in English as well. For the convenience of readers, the standards are listed under their general UDC classifications. In ordering copies of standards, please refer to the number following the title.

621.3 ELECTRICAL ENGINEERING

Australia (SAA)

Approval and test specifications for electric hand-lamps C.118-1957
Fixed domestic electric wash-boilers C.314-1957
Automatic electric storage water heaters (15 to 150 gallons capacity) C.316-1957

Austria (ONA)

Safety insulated apparatus ÖNORM E 2999
6 stds for different safety fuses ÖNORM E 3020,-4/8
Steel-aluminum stranded overhead cable ÖNORM E 4009
Graphical symbols for switchboard instruments ÖNORM E 6000

Canada (CSA)

Construction and test of fractional horsepower electric motors for other than hazardous locations C22.2 No. 11-1957
Specifications for aluminum stranded conductors and aluminum conductors steel reinforced C49-1957
Essential requirements and minimum standards governing electrical installations for buildings, structures and premises (all potentials) Canadian Electrical Code, Part 1 C22.1-1958
Specification for use of flexible supply cords and fixture wires with electric appliances, Canadian Electrical Code, Part 2 C22.2 No. 0.2-1958

France (AFNOR)

Television receivers connected to main line, rules for installation NF C 92-200
Letter symbols used in electrical engineering NF C 03-000

Germany (DNA)

6 stds on different safety signs DIN 40011/12/14
Cathode-ray tubes, 70° DIN 41541
Fish plates for electric railways DIN 43163
Symbols for switch diagram of compressed air plant DIN 43609
Heavy fuses for voltage up to 500 v DIN 43620
Electric diagram for machine tools DIN 43666
Equalizing wires and cords for thermoelements DIN 43713
Housings for recording measuring instruments DIN 43830
Tubes for radios and television sets: types and number of their functions DIN 45312
Terminals, designation of DIN 46199
Paper capacitors, 250 up to 750 v DIN 41167
Dry rectifiers, denominations DIN 41750
3 stds for wall bushings, 10-30 kv DIN 43641/3/5
2 stds for handwheels for switchboard instruments DIN 46055/6
Ladder for telegraph pole DIN 48352

Hungary (MSZH)

Strip fuses 80-200 amp, 380 v with retarded action MSZ 22655-56

India (ISI)

General purpose low frequency chokes IS:1037
Safety Code for mains-operated radio receivers IS:616
Glossary of terms for primary cells and batteries IS:1025
Loudspeaker systems for community radio receivers IS:1034
Single pole 5-ampere tumbler switches for ac/dc IS:1087

Israel (SII)

Domestic electric heating and cooking appliances S.I. 72
Electric wiring regulations: installation of heating and cooking appliances S.I. 108
7 stds for different screwed electric fuses with cartridge S.I. 230/7

Japan (JISC)

Cambric insulated wires JIS C 3403
2 stds for testing method of insulators JIS C 3801/2
2 stds for interference suppressors for standard broadcast bands, types C and F JIS C 6901/2
4 stds for link, cartridge, and plug fuses and holders JIS C 8313/4,-19,-52
4 stds for dry cells and batteries JIS C 8501/2,-04/5

Netherlands (HCNN)

Cable accessories (heavy current). Branch jaw terminals for one or two branch cores NEN 2131
Lug sockets for copper conductors with core sections from 4 mm² and above NEN 3062

Poland

Overcurrent protection of test installation PN E-05022
Allowable overload of oil transformers PN E-81000
Arrangement of terminals on transformers PN E-81003
1-, 2-, 3- and 4-strand cables KOG and KOGU for marine use PN E-90008
Aluminum wire, insulated PN E-90037
Telephone transformers PN T-80100
Telephone microphones PN T-82005
Telephone apparatus type CB PN T-82300

Roumania (CSS)

Poles, wooden for overhead lines STAS 257-57
High tension wiring for automobiles STAS 1021-56
Graphical symbol for electric machines, transformers, etc STAS 2408-56
Electric elevators, basic dimensions STAS 2453-56
Insulators, delta-cup type for voltages up to 35 kv STAS 2513-56

Spain (IRATRA)

2 stds for insulators for overhead lines, screw pins and gages UNE 21007/8
2 stds for paper-insulated cables for 1000 to 20000 v UNE 21024/5
Rubber insulated cable for industrial service up to 3000 v UNE 21026
Flexible metal tubes for protection of electric conductors UNE 26125
Insulating grommets UNE 26130

Sweden (SIS)

Black-enameled, screwing, armored tubing type OP SEN 24 10 13
Galvanized screwing, armored tubing type OPG SEN 24 10 15
Line clips for marine wiring SEN 30 02 02
6 stds for brass fittings for marine type wire protecting tubing SEN 30 02 07/8,-12/5
2 stds for brass joint box, marine type, 250 v SEN 30 02 19/20
2 stds for switch 10 amp 250 v, marine type SEN 30 02 24/5
2 stds for bayonet lamp holder, marine type SEN 30 02 50/1
2 stds for Morse key, marine type, movable and fixed SEN 30 02 90/1
4 stds for heating appliance ceramic details SEN 33 02 01/4
Rubber and thermoplastic insulated wires SEN 24 02
Lightning arresters SEN 28 04
Telegraph signal installation and cables SEN 55 02

11 stds for overhead line support insulators types I 15-I 120 SEN 24 06 01/11
Screw profiles and gage for pinholes of support insulators SEN 24 06 19
Saddle insulators SEN 24 06 20
Star insulators SEN 24 06 21
Insulator pins, survey SEN 24 06 40
Guard wire bolts for insulators I 15 SEN 24 06 41
Straight pins for insulators I 15 SEN 24 06 42
6 stds for swan-neck brackets for insulators I 15-I 75 SEN 24 06 50/4,-6
Screw thread profile of swan-neck bracket SEN 24 06 59
Fork brackets for insulators I 55-I 95 SEN 24 06 60
2 stds for tubular brackets for insulators I 75-I 120 SEN 24 06 65/6
Channel-bar brackets for insulators I 105 and I 120 SEN 24 06 67
Double brackets for insulators I 95, I 105, I 120 SEN 24 06 70
Sheet metal top-pin for insulators I 30-I 95 SEN 24 06 77
Channel-bar top-pin for insulators I 55-I 120 SEN 24 06 78
Top-barbed end of insulator pins SEN 24 06 85
Insulated metal tubing type B for wiring SEN 24 10 01
Black-enameled, smooth, armored tubing type SP for wiring SEN 24 10 11

Union of South Africa (SABS)

Standard specification for oven thermostats for electric stoves SABS 537-1956

United Kingdom (BSI)

Impregnated-asbestos-covered copper conductors:
Round wire BS 1497:Part 1:1957
Rectangular conductors BS 1497:Part 2:1957
Domestic electric vacuum cleaners BS 1645:1957
Cotton-covered copper conductors. Rectangular conductors BS 1791:Part 2:1957
Vulcanized rubber insulation and sheath (including polychloroprene) of electric cables BS 2899:1958
X-ray tube cable terminations and receptacles operating at 55 kv peak BS 2928:1957
Drafting guide on electrical standards BS PD 2879, Sept. 1957
Domestic electric vacuum cleaners BS 1645:1957
Surge diverters BS 2914:1957
Electric strength of solid insulating materials at power frequencies BS 2918:1957
Waterproof electric light fittings BS 97:1958
Reversible connectors for portable electrical appliances BS 562:1958
Intrinsically safe electrical apparatus and circuits BS 1259:1958
Domestic electric steam irons BS 1732:Part 2:1958
Cartridge fuse-links for telecommunication and light electrical apparatus BS 2950:1958
Dimensions of 3-phase electric motors with ventilated enclosures BS 2960:1958
Phenolic resin-bonded cotton fabric sheets for electrical purposes BS 2966:1958

USSR

Drums, wooden for electric cable and wire GOST 5151-57
Three-phase synchronous motors from 100 kw to 1000 kw: scale of standard nominal powers, voltages and rpm GOST 8585-57
Three-phase synchronous generators from 100 kw to 1000 kw: scale of standard nominal powers, voltages and rpm GOST 8586-57
Screw thread of the protective glass globe of lighting appliances GOST 8587-57
Manhole for telephone line cables GOST 8591-57
Dimensional tolerances for mounting electric rotating machines GOST 8592-57
Switch and outlet boxes GOST 8594-57
Resistance wire, enameled GOST 8598-57
X-ray tubes, watercooled, type BSV2 GOST 8600-57
X-ray tubes, diagnostical, type 2BDM4-75 GOST 8601-57
X-ray tubes, therapeutical, type 3BTM1-200 GOST 8603-57
X-ray tubes, diagnostical, type 2-5BDM3-110 GOST 8604-57
X-ray tubes, diagnostical, type 10BD1-110 GOST 8605-57
Insulators, porcelain, for outside installation from 3 to 220 kv GOST 8608-57

Yugoslavia (JUS)

11 stds for different mechanical and electrical tests of electrical appliances JUS N.A5.020/1,-030/1,-040/3,-050/2
General specification for household plug and socket outlets JUS N.E0.350
2 stds for two-pole socket outlet 10 amp 250 v with and without grounding contact JUS N.E3.500/1
8 stds for set of gages for two-pole 10 amp 250 v socket outlets JUS N.E3.510/7
2 stds for two-pole plugs with and without grounding contact, 10 amp 250 v JUS N.E3.551/2
4 stds for set of gages for two-pole plugs 10 amp 250 v JUS N.E3.560/3
2 stds for tubular fluorescent lamps for general use. General requirements JUS N.L4.003/4
3 stds for medium bi-pin caps type G13 and gages for it JUS N.L4.055/7
3 stds for 3 types of generators for motor vehicles JUS N.P2.011/3
Electric starter for motor vehicle JUS N.P6.301

621.6 FLUID DISTRIBUTION, STORAGE, CONTAINERS, PIPES, PUMPS

Australia (SAA)

Precast concrete drainage pipes A 35-1957

Canada (CSA)

Specification for marine valves and fittings B109-1958

France (AFNOR)

Pipes and fittings, cast iron, series "STANDARD" or "ST," general survey NF A 48-551
16 stds for different types of cast iron pipes and fittings (series "ST") NF A 48-552/67
2 stds for flexible metal tubing NF E 29-050/1
Plastic washers for industrial bronze valves NF E 29-430

Germany (DNA)

7 stds for different hose-couplings DIN 14301/3, 14312, 14321/3
Precision steel pipes, cold-drawn, welded DIN 2393
Blind coupling, type C DIN 14311
3 stds for light, medium and heavy screwing pipes DIN 2439/41
Compressed air pipe couplings, 42 mm between prongs DIN 3481

United Kingdom (BSI)

Steel tubes and tubulars suitable for screwing to B.S. 21 pipe threads BS 1387:1957
Domed metallic bursting discs and bursting disc assemblies BS 2915:1957
Gas meter unions and adaptors BS 746:1958
Centrifugally cast (spun) iron pressure pipes for water, gas and sewage BS 1211:1958
Oil resistant compressed asbestos fibre jointing BS 1832:1958

USSR

Pumps, double, vertical, piston type, steam operated GOST 8614-57

Yugoslavia (JUS)

5 stds for different mechanical tests of pipes JUS C.A4.007/011

621.85 FLEXIBLE TRANSMISSION AND DRIVES

Belgium (IBN)

Flat transmission belts NBN 470

Czechoslovakia (CSN)

2 stds for transmission belts "Titan" and "Rapid" CSN 80 4741/2

France (AFNOR)

Flat transmission belts, widths of NF E 24-101

Spain (IRATRA)

Flat belts and pulleys, width of UNE 18007

621.88 MECHANICAL ATTACHMENT AND FIXING

Bulgaria

22 standards for screws for metals (bound in one booklet) BDS 1358/77, 661, 832
Straight studs tapped on both ends BDS 1238
Shaft collars BDS 2391

China

7 stds for nails, different types CNS 637/43 G 6/12

Czechoslovakia (CSN)

Hinges, different types of CSN 16 6352

France (AFNOR)

Bolts and nuts. Specifications NF E 27-005
2 stds for pipe holding clamps NF E 29-591/2

Germany (DNA)

Clamping vices, double DIN 6370
Box-end wrenches DIN 838
Wrench, widths across flats DIN 475
Open- and box-end wrenches DIN 899
Hexagon and castle nuts for locomotive coupling stretcher DIN 30389
Cup springs DIN 2093
Hooks for hanging signs on railroad cars DIN 26512
Clamps holding automobile lubricating tubing DIN 71434
Wide head nails DIN 1160

Hungary (MSZH)

2 stds for snap rings, seeger type, for holes and shafts MSZ 231/2-56

Israel (SII)

Nails for wood S.I. 242

Japan (JISC)

Bolts, nuts, screws and rivets JIS B 1291*
Round nails for export JIS G 3526*

Mexico (DGN)

Tacks DGN B 88-1957

Poland

2 stds for nails, carpenter's PN M-81021,-81023
Rivets, tubular, countersunk head PN M-82974/5

Spain (IRATRA)

Special rivets, denominations and graphical representation UNE 17012
Steel rivets, sizes and tolerances over 5 mm UNE 17014
Caps for flexible metal tubes UNE 26124
Light alloy bushings for blind holes UNE 26127

Sweden (SIS)

2 stds for flat pliers SMS 1665/6
Flat pliers with side nippers SMS 1667
2 stds for side and end nippers SMS 1668/9
Bending pliers SMS 1670
Combination pliers SMS 1671
Nail pullers SMS 1672
Rules for testing pliers SMS 1673

United Kingdom (BSI)

General purpose acme screw threads BS 1104:1957

629.13 AERONAUTICAL ENGINEERING AIRCRAFT

Belgium (IBN)

Conduits on board of aircrafts NBN 384.71

Italy (UNI)

4 stds for direction of aircraft command movement, identification of piping on aircraft, pressure cabin ground test connections, all established on the basis of ISO/TC 20 Recommendations UNI 3880/3

Roller chain used on aircraft, standard sizes UNI 3884

Admissible tolerances in respect to aviation motors UNI 3885

Direction of command movement of aviation motors and propellers UNI 3886

3 stds for different aviation fuels: aviation gasoline, turbo-reactor fuels AMC141 and AMC142 UNI 3887/9

Aviation lubricating oil for reciprocating engines UNI 3890

Mineral oil for aircraft hydraulic system UNI 3891

Japan (JISC)

2 stds for standard qualification procedure for aircraft welding technique (aluminum and aluminum alloy, steel and steel alloy) JIS W 0901/2

2 stds for hexagon-head bolts and self-locking nuts for aircraft JIS W 1616/7

4 stds for piston rings for aircraft engine, types 1,2,3,4 JIS W 4231/4

Engine synchroscope indicator for aircraft JIS W 6319

Suction gage for aircraft JIS W 6404

Gaskets for aircraft engines JIS W 1519/22

Flat- and round-head machine screws for aircraft JIS W 1605/8

Oil cooler for aircraft (plate type) JIS W 2803

Pressure altimeter for aircraft JIS W 6105

Hose fitting ends for aircraft fluid connection (flared type) JIS W 1801

Adapter of bead type fitting for aircraft fluid connection JIS W 1805/6

7 stds for self-locking nuts for aircraft JIS W 1609/15

Spain (IRATRA)

2 stds for different tests of wood used in aircraft UNE 28012 h4/h5

2 stds for aeronautical terminology UNE 28002 h5/6

77 PHOTOGRAPHY AND CINEMATOGRAPHY

Germany (DNA)

Movie films, climatic conditions for storage and treatment DIN 15556

United Kingdom (BSI)

Dimensions of film spools for airborne cameras BS 2940:1958

Recommendations for screen luminance for the projection of 16mm film BS 2954:1958

Camera shutters BS 1592:1958

Slides and opaques for television BS 2948:1958

Picture areas of motion picture films for television BS 2962:1958

Screen luminance in cinematograph laboratory and studio review rooms BS 2964: 1958

USSR

Exposure-time markings for shutters GOST 3268-57

771 PHOTOGRAPHIC EQUIPMENT

Germany (DNA)

X-ray photography and cinematography raw films DIN 19006

Negative material for black and white photos, determination of sensitivity to light DIN 4512

Japan (JISC)

Tripod for cameras JIS B 7118

Range finders JIS B 7119

Shutter cable release JIS B 7104-1955*

Accessory clips and shoes for cameras JIS B 7101*

Photographic lenses (for still camera) JIS B 7110*

Photographic glass filter (sharp cut) JIS B 7113*

Hand camera for export JIS B 7107

Sub-miniature camera, box camera for export JIS B 7108

Poland

Reels for still cameras PN C-99011-1956

USSR

Spool for 60mm photographic film GOST 3548-56

Shutter release cable GOST 8189-56

NEW BOOKS . . .

GROOVED PULLEYS FOR V-BELTS, GROOVE SECTIONS A, B, C, D, E. ISO Recommendation 52. 1957. First edition. International Organization for Standardization, 1, rue de Varembé, Geneva, Switzerland. (Available from the American Standards Association, 70 E. 45 Street, New York 17, N. Y.) $0.80. Approved by 22 ISO member-bodies (not including the United States), this Recommendation states the principal characteristics of grooved pulleys intended to take endless V-belts for industrial power-transmission drives for horizontal parallel-shaft operation. The letters A, B, C, D, E are used in ISO R 52 to identify the groove sections to which the dimensions apply.

In proposing modifications to the draft recommendations, the groups concerned in the USA declared that the proposal would exclude all American-made pulleys. It would also affect the recorded length measurements of all American-made industrial V-belts that would be supplied with ISO groove pulleys, they said. Although many of the deviations would not affect practical interchangeability between American products and those made to ISO recommendations, all pulleys made to USA standards could be rejected on one or more counts if inspected to the ISO dimensions, they declared.

The USA spokesmen were of the opinion that differences in the various national standards could have been ironed out in an international recommendation and still retain the large degree of interchangeability that now exists among the various countries. In their opinion, since ISO Recommendation R52 changes the pitch width, it will make necessary drastic changes in all countries.

PROCEEDINGS. (Standardization, Economy Through Application). Sixth Annual Meeting, 1957. Standards Engineers Society, P. O. Box 281, Camden 1, N. J. 8½ x 11 in. 128 pp. Heavy paper cover. $3.75. How to achieve the savings that standardization makes possible is described by outstanding national authorities. Seventeen papers presented at the Society's Sixth Annual Meeting are given in full, with charts and illustrations. The meeting was held in New York, September 23-25, 1957.

Subjects covered include standards and management, company standards, cooperation between company departments, sources of information for preparing standards, reliability, and the relation of standards to cost reduction.

REFERENCE DATA FOR RADIO ENGINEERS. Fourth edition. 1121 pp. 1¾ x 5¾ x 8⅝. Approx 1000 illustrations and tables. 38 chapters. International Telephone and Telegraph Corporation, 67 Broad Street, New York 4, N. Y. $6.00. The 1949 edition has been brought up to date, expanded, and new material added on such subjects as modern network design of filters, magnetic amplifiers, feedback control systems, semiconductors, transistors, scattering matrixes, digital computors, nuclear physics, information theory, and statistics. This is primarily a compilation of equations, graphs, tables, and similar data that are frequently needed in general radio engineering and in college instruction. Reference is made to the work on American Standards for electronic components and parts.

STEEL SOCKETS SCREWED IN ACCORDANCE WITH ISO RECOMMENDATION R7. MINIMUM LENGTHS. (Pipe Couplings). ISO Recommendation 50. First edition. July 1957. International Organization for Standardization, 1, rue de Varembé, Geneva, Switzerland. (Copies available from the American Standards Association, 70 E. 45 Street, New York 17, N. Y.) $0.50. Prepared by Technical Committee ISO/TC5, Pipes and Fittings, this recently published ISO Recommendation provides nominal sizes of steel couplings for corresponding minimum length of sockets. The minimum length of the couplings is determined by means of a formula which takes into consideration the length of the useful thread on the pipe end and the pitch of the thread. These couplings are to be assembled with pipe threaded in accordance with ISO Recommendation R7, Pipe Threads for Gas List Tubes and Screwed Fittings where Pressure-Tight Joints Are Made on the Threads (⅛ inch to 6 inches).

The USA is not participating in this international project, but does have observer status on ISO Technical Committee 5.

WHAT IS YOUR QUESTION?

What is the electronic industry doing with regard to a standard for connectors?

The Armed Services have made most of the contributions to the standardization of connectors, but they have only scratched the surface. MIL Specs now in use provide good coverage for coaxial-type connectors, for "AN" connectors, and for a few of the molded rectangular types. The major problem in this type of commodity is the phenomenal variety of parts that can be made up from a relatively few basic components. A few of these variables are (1) number of contacts, (2) current rating of contacts, (3) dielectric withstand voltage between contacts, (4) style of housing, (5) special appearance, disconnect, or environmental features. In a seemingly simple line such as the "AN" series, there are probably several hundred thousand different combinations that can be made up from a hundred different pieces.

For this reason, the connector manufacturing industry is geared to a custom-made approach. It should be emphasized that while specific hardware standards are nearly nonexistent outside of the MIL Spec system, there has been some work on what may be called "system standards" that do much to limit wasteful design freedoms. For example, EIA has standards for battery socket hole patterns that at least prevent the free introduction of radically new configuration.

—Reply by S. H. Watson, RCA, Victor Division, to question asked at the National Conference on Standards, San Francisco, California, November 1957.

Why does Government have different requirements from those of industry for the same thing, for the same purpose?

The Government often uses requirements differing from those of industry because it must buy on competitive bids. It cannot select the bidders and must accept the low bid. Consequently it can expect to receive the lowest quality that will barely conform to the specification and has no recourse if any requirement is not explicitly covered by the specification. Industry, on the other hand, can select its suppliers from among firms known to furnish serviceable products of the desired quality and hence need not resort to meticulous requirements.

—Reply by Dr A. T. McPherson, National Bureau of Standards, to question asked at the National Conference on Standards, San Francisco, California, November 1957.

What specific program can be suggested to improve standardization and its cost benefits beyond the normal organization approach, e.g., liaison between manufacturing engineer staff and product design or engineering groups?

Although our program deals with engineering standards, promotion and training would be just as important to the product standards program. We have found that the proper organization must include sales promotion if standards are to obtain maximum voluntary use.

—Reply by D. F. Hollingsworth, E. I. du Pont de Nemours & Company, to question asked at the National Conference on Standards, San Francisco, California, November 1957.

NEWS BRIEFS . . . . .

Universal measuring machine checks pitch diameter of internal screw threads to within ten thousandths of an inch. Here diameter of screw thread ring gage is being measured at SPS Jenkintown Laboratory.

• The Standard Pressed Steel Company has announced the opening of two of its three new screw thread metrology laboratories. The first two are at Jenkintown, Pa., and at Cleveland, Ohio. The third will be at the new West Coast division of the company in Santa Ana, near Los Angeles, California. The laboratories are being completely equipped for thread-size control of Classes 3A, 3B, 2A, and 2B unified screw threads and of ANPT and NPTF types of tapered threads. Some of the precision measuring machines will check critical thread dimensions to the nearest millionth of an inch.

These laboratories will make available to users of precision industrial fasteners the most advanced screw thread measuring equipment, the company announces. Goal will be to help industry meet steadily increasing demands for mechanical precision and to reduce production losses resulting from "needless" fastener assembly problems, according to H. Thomas Hallowell, Jr, president of Standard Pressed Steel.

• Dr W. P. Dobson, chairman, Administrative Board, Canadian Standards Association, Testing Laboratories, has announced that the Laboratories have been authorized to act as a certification authority for the testing of domestic and industrial gas appliances and equipment.

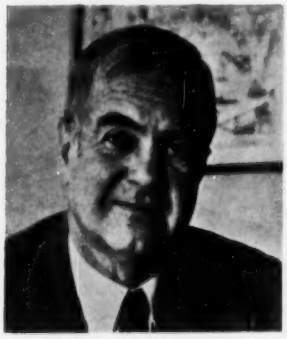
The CSA Gas Certification Service will be based upon CSA specifications for gas burning appliances and equipment.

• *Recently noted use of American Standard*—Advertised on the label of a loaf pan sold by Sears Roebuck

was the information "Conforms to size recommended by the American Standards Association."

Sizes of cooking pans are specified in the American Standard Dimensions, Tolerances, and Terminology for Home Cooking and Baking Utensils, Z61.1-1949.

• Edmund A. Prentis, member of the New York engineering firm of Spencer, White & Prentis, and past president of the American Standards Association, has been named recipient of the 1958 Alexander Hamilton Medal.



Edmund A. Prentis

The Medal is presented by the Association of the Alumni of Columbia College for "distinguished service in any field of human endeavor." It is being presented April 30 at a dinner in the Rotunda of Low Memorial Library, Columbia University. Admiral Ben Moreell, Civil Engineer Corps, USN (Ret), a friend of Mr Prentis and an associate in many engineering projects, will be the principal speaker. Admiral Moreell organized the Navy's Construction Battalions (the "Seabees") in World War II. Major drydocks for the United States Navy have been among the many important engineering projects directed by Mr Prentis. Others included the 1950 reconstruction of the White House and construction of tunnels for New York subways.

Mr Prentis has written several books and many articles on engineering.

He served as vice-president of the American Standards Association from 1936-1938 and as president from 1939-1940.

In 1950 he received the Egleston Medal, an honor awarded annually by the Columbia School of Engineering. He received Columbia's honorary Doctor of Science degree in 1956.

Mr Prentis is also a student and patron of early American history and art, and served recently as chairman of Columbia University's Committee on Columbiana. Under his direction several notable historical collections have been assembled in the Columbia University Club and he and his sister were donors of three period rooms at the New York Historical Society.

The Alexander Hamilton Medal was established in memory of Hamilton, an early student of pre-revolutionary King's College (as Columbia was then known). It has been awarded in the past only to graduates of Columbia College. Mr. Prentis is a graduate of the Columbia University Engineering School.

• Leadership in standards work was one of the services that brought Stanley Harley a knighthood early this year. Sir Stanley, chairman and managing director of the Coventry Gauge and Tool Company, Ltd, is well known in the USA as leader of a number of the British delegations at ABC meetings held to coordinate engineering standards between the United Kingdom, Canada, and the USA. He was head of the UK delegation at the meeting of a working group on Screw Threads in New York, October 15-17, 1957.

Sir Stanley has long been active in the work of the British Standards Institution. Until recently he was chairman of BSI's Engineering Divisional Council. At the present time, he represents the Machine Tool Trades Association and the Gauge and Tool Makers' Association on the Institution's industry standards committees for mechanical engineering and instruments, respectively.

• The 7th Annual Meeting of the Standards Engineers Society will be held at the Benjamin Franklin Hotel, Philadelphia, Pa., on September 22, 23, and 24, 1958. The theme of the meeting will be "Standardization — A Must for the Space Age."

The Annual Meeting Committee is sponsoring a technical paper contest in conjunction with the meeting. An award of $50 will be presented to the author of the winning paper and it will be published later in *Standards Engineering*. Rules for the contest are:

1. Papers must be concerned with some aspect of standardization, and should preferably be related to the theme of the Seventh Annual Meeting–"Standardization–A Must for the Space Age."

2. Papers should be 1600-2400 words in length.

3. Papers will be judged by the Awards Committee on the basis of content and originality.

4. The contest is open to anyone engaged in or interested in standards engineering.

5. In order to be considered, papers must be typed on one side of 8½ in. x 11 in. paper, double spaced, submitted in quadruplicate and postmarked not later than July 31, 1958. They should be sent to Mr E. D. Clark, vice-chairman of the SES Seventh Annual Meeting, Standard Pressed Steel Company, Jenkintown, Pennsylvania.

The Standards Engineers Society was organized in 1947 to further standardization as a means of enhancing general welfare and to promote knowledge and use of approved standards issued by regularly constituted standardizing bodies and to maintain a high professional standing among standards engineers.

Officers of the Society are:

President: Herbert G. Arlt, Bell Telephone Laboratories, Inc, Murray Hill, N.J.

Vice-President: Franklin E. Powell, Department of the Army, Washington, D. C.

Secretary: Jean A. Caffiaux, Electronic Industries Assn, New York, N. Y.

Treasurer: Charles J. Lawson, Sr, International Business Machines Corp, New York, N. Y.

• A series of articles, "Guide to Materials Standards and Specifications," being published by the magazine *Materials in Design Engineering*, opened in the March 1958 issue with a thoroughgoing discussion of Government and National Standards. The series is being written by S. P. Kaidanovsky, Consulting Engineer. Mr Kaidanovsky was for many years with the Federal Specifications Board of the Federal Government and chairman of the Federal Interdepartmental Standards Council. At that time, the Council was responsible for coordinating work being done by the Government departments on standards and specifications. Mr Kaidanovsky was also author of a series of 20 articles on Government Standards that appeared

in THE MAGAZINE OF STANDARDS periodically from 1953 to 1956.

Mr Kaidanovsky's first article on materials standards describes, and tells how to obtain, Federal specifications and standards; military specifications and standards; Commercial Standards and Simplified Practices; ASTM standards; SAE standards; and American Standards.

As the editor of *Materials in Design Engineering* explains, "The aim of this series of six articles is to bring together in one place useful information about the many materials standards and specifications documents available to the engineer and designer."

The remaining five articles in the series will deal with organizations and standards concerned with irons and steels, nonferrous metals, plastics and elastomers, other nonmetallics, and finishes. Included in each of the articles will be summary lists of and references to all important standards and specifications.

Materials in Design Engineering is published by Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y.

• The Associated General Contractors of America, member-body of ASA, has named Charles A. Selby as

Charles A. Selby

its representative on ASA's Standards Council.

Mr Selby is president and director of Vermilya-Brown Company, Incorporated, and president of the Building Contractors and Mason Builders Association, affiliated with the Building Trades Employers Association of New York. He is one of the New York State National Directors of the Associated General Contractors of America, and is a past president of the New York City Chapter of the AGC. He is also a director of the New York Building Congress, Inc.

Following service in the Army as Intelligence officer on the staff of the Commander of the Hawaiian Islands, and later as chief of Combat Intelligence in the Headquarters of Army Forces, Pacific Ocean Area, he remained a Colonel in the U.S. Army Reserve. As such, he has been commandant of the First Army Intelligence School and president of the Military Intelligence Reserve Society.

Before his election as president of Vermilya-Brown Company, he served as vice-president and treasurer, and as vice-president in charge of construction of Paul Tishman, General Contractor.

• The use of standards in purchasing was one of the subjects discussed by the staff of the American Standards Association with a group of officials from South America, Africa, and the Far East, April 7. The group was participating in the Seventh International Workshop in Supply Management being conducted by the International Cooperation Administration. The visit to ASA was part of the workshop program. It followed intensive study of methods and principles of purchasing, materials handling, warehousing, and stores control at the General Services Administration in Washington. After visiting industrial organizations in the New York and Philadelphia area, the group spent several days studying the purchasing methods of the City of Milwaukee. The workshop activities included sessions at which each member of the group conducted discussions devoted to problems of his own government operations. Purchasing officers of Afghanistan, Bolivia, Costa Rica, Ecuador, Ethiopia, Indonesia, Iraq, Haiti, Pakistan, Peru, and Vietnam were members of the group.

• "Standard Parts — They Can Be Versatile," a paper presented by George C. Neuschaefer at the 1957 symposium on reliability and quality control, brought Mr Neuschaefer the First Annual National Reliability Award. The award was presented at the Fourth National Symposium on Reliability and Quality Control in Electronics, January 7, 1958.

Mr Neuschaefer is Branch Head of Electronics at the United States Naval Shipyards in Brooklyn, N. Y. His paper reviewed the history and current effort on reliability leading up to a proposal for a General Specification for Electronic Parts which could provide the means of obtaining versatile standard parts and components. Mr Neuschaefer believes that such a specification should help to define objectives for new part development; should specify operating conditions in a uniform manner; and should provide a means of approving standard parts for peculiar applications.

The symposiums on reliability and quality control in electronics are sponsored by the Institute of Radio Engineers, the Electronic Industries Association, the American Society for Quality Control, and the American Institute of Electrical Engineers.

• Dr Stephen J. Kennedy has been awarded the Harold DeWitt Smith Memorial Medal by Committee D-13 on Textiles of the American Society for Testing Materials. The medal is given for "outstanding accomplishment in the development and application of fundamental knowledge of textile fibers." Dr Kennedy is research director of the Textile, Clothing, and Footwear Division, Quartermaster Research and Development Center, Natick, Mass. He represents the Department of the Army on ASA Sectional Committee L14, Textile Test Methods, sponsored by the American Society for Testing Materials and the American Association of Textile Chemists and Colorists.

The medal was presented at a dinner on March 20, during the Spring Meeting of Committee D-13 in Washington, D. C.

• An up-to-date edition of the Underwriters' Laboratories safety standards for specialty transformers has been approved by the American Standards Association as a revision of American Standard C33.4-1956. Copies containing the revisions have been published by Underwriters' Laboratories. The standard is used by the Laboratories in testing equipment to determine whether it is safe for consumer use. On the basis of these tests the Laboratories grants listing and use of its labels.

Specialty transformers are those used with mercury-vapor lamps; sun lamps; remote-control, low-energy-power, and signal circuits; ignition transformers for use with gas burn-

ers and oil burners; gas-tube-sign transformers for use with inert-gas tubes; and transformers for use with electric toys.

The most important of the recent changes is the addition of a rating test for Class 2 transformers. This is particularly concerned with possible hazards when a Class 2 transformer, which is provided with a thermostat, is used in the control circuit of a gas appliance. In such applications the thermostat in the transformer may open before the control device in the appliance has fully functioned. Thus, with each cycle of the operation of the thermostat, a small quantity of gas is likely to be released to accumulate in the appliance and possibly to ignite with an explosive effect. The new rating test provides that an automatically reset thermostat should not open when a Class 2 transformer is delivering its rated volt-ampere output.

Other recent revisions recognize a change in methods of providing nameplate data and label and acceptance of a three-conductor Type SPT-3 cord in the Nos. 18-16 Awg sizes. This is for use with portable gas-tube-sign transformers.

Other changes included in the published edition provide for a burnout test on a gas-tube-sign transformer and on an open core-and-oil transformer, as well as elimination of a provision for a heating test with the high-voltage leads grounded and certain maximum acceptable temperature rises under these conditions.

They also limit the use of attachment-plug caps on a gas-tube-sign transformer to the three-blade cap of the grounding type. One addition permits exposing the compound which covers high-voltage parts when a cover is removed for wiring or servicing the transformer. To make it clear that certain small power transformers are not ruled out, a new paragraph outlines the provisions for recognition of transformers mounted on outlet-box covers. Also, provision is made that leads be not less than 18 inches long to reduce the likelihood that splices in the secondary leads will be pulled into the flexible conduit.

The new American Standard, Specialty Transformers, UL 506; ASA C33.4-1958, can be obtained from the American Standards Association, Inc, 70 East 45 Street, New York 17, N. Y. at $1.00 per copy.

Standards Outlook

by LEO B. MOORE

Mr Moore is Associate Professor of Industrial Management, Massachusetts Institute of Technology, where he teaches a full-term course in industrial standardization.

Value Analysis

Standardization is admittedly an engineering concern and yet, unlike other engineering endeavors, it does not possess many extensive or intensive engineering analytical techniques. The "art" content of standardization is extremely high as compared to other engineering activities. For this reason, standards engineers should be alert for developments in other areas which may have merit when transferred or applied in some degree to their own efforts.

Value analysis is one such development that seems to be at home in the standards area. In fact, one company to my knowledge has recently reorganized its standards department to include a section with a value analysis responsibility under the title "value engineering." Value analysis seems to possess for this company a pattern for creative thinking which will provide resource for standards activity, while at the same time giving force and direction to its standards efforts. There is no question that the purchasing function of a company will find merit in the work of value engineers, quite possibly for the same reason that it finds worth in the work of standards engineers. On this basis alone, it may be reasonable for standards to give more thought to the basic content of value analysis.

The key to value analysis seems to be cost. Its techniques are centered around an objective and searching examination of an item of cost with the intent of securing an optimum result in terms of the function being performed or desired. The item of cost may be any object, material, operation, process, service, or whatever in any function of the business but with particular emphasis on the production area where real values are evident and susceptible to challenge, comparison, and choice. The challenging attitude is all pervasive in value analysis and the major effort is centered upon the questioning approach that subjects the cost item to the scrutiny of a thousand alternatives and produces an atmosphere of insistence and determination to pay only the lowest price for the needed function. The powerful question, Is it worth the cost? draws heavily upon the imagination and nurtures the creative thinking of the value engineer and the entire organization, as they search for product improvement through the same or better performance at a lower cost.

This notion of taking a deeper second look is sensible because of the nature of the decision-making process in management. Frequently, we must decide before all the facts are in; often, we gain new knowledge from experience. In both cases, we need another chance to raise the level of performance. This is particularly true of the standardization process. We need the opportunity to feed back into the operating organization the wealth of our accumulating experiences and to contribute to the task of waste elimination through standards that reflect the newest and best materials and methods but need a vehicle for their application.

AMERICAN STANDARDS UNDER WAY

Status as of April 18, 1958

Legend — *Standards Council* — Approval by Standards Council is final approval as American Standard; usually requires 4 weeks. *Board of Review*— Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks. *Standards Board* — Approves standards to send to Standards Council or Board of Review for final action; approval by standards boards usually takes 4 weeks.

Note — Send check when ordering standards listed as published to avoid service charge for handling.

BUILDING AND CONSTRUCTION

American Standard Published

Brick, Methods of Sampling and Testing, ASTM C 67-57; ASA A82.1-1958 (Revision of ASTM C 67-50; ASA A82.1-1951) $0.30

Test specimens, procedure, calculation, and report for the sampling and testing of brick for modulus of rupture (flexure test), compressive strength, absorption, saturation coefficient, effect of freezing and thawing, initial rate of absorption (suction), and efflorescence.

Sponsor: American Society for Testing Materials

American Standard Approved

Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units, Specifications for, ASTM C 126-57T; ASA A101.1-1958 (Revision of ASTM C 126-55T; ASA A101.1-1956)

Sponsor: American Society for Testing Materials

In Standards Board

Fire Tests of Door Assemblies, Methods of, ASTM E 152-56T; ASA A2.2- (Revision of ASTM E 152-55T; NFPA 252; ASA A2.2-1956)

Sponsors: National Bureau of Standards; National Fire Protection Association; American Society for Testing Materials

CHEMICAL INDUSTRY

American Standard Published

Common Name for the Pest Control Chemical 3-phenyl-1,1-dimethylurea (fenuron) K62.7-1958 $0.25

Sponsor: U.S. Department of Agriculture

In Standard Board

Trisodium Phosphate, Specification for, ASTM D 538-57; ASA K60.12- (Revision of ASTM D 538-55T; ASA K60.12-1956)

Sponsor: American Society for Testing Materials

DRAWINGS, SYMBOLS, AND ABBREVIATIONS

American Standard Approved

American Drafting Standards Manual, Section 7, Gears, Splines and Serrations, Y14.7-1958 (Partial revision of Z14.1-1946)

Sponsors: American Society of Engineering Education; American Society of Mechanical Engineers

ELECTRIC AND ELECTRONIC

American Standards Published

Power Circuit Breaker Control, Requirements for, C37.11-1957 $0.80

Sponsor: Electrical Standards Board

Definitions of Electrical Terms (Partial revision of C42-1941)

Group 55, Illuminating Engineering, C42.55-1956 $0.60

Group 65, Communication, C42.65-1957 $3.00

Group 95, Miscellaneous, C42.95-1957 $0.80

Sponsor: American Institute of Electrical Engineers

Outdoor Apparatus Bushings (Used with Power Circuit Breakers and Outdoor Transformers) Electrical and Dimensional Characteristics of, C76.1a-1958 (Supplement to and partial revision of C76.1-1943) $0.50

Sponsor: American Institute of Electrical Engineers

American Standard Approved

Designation of Miniature Lamps, Method for the, C78.390-1958

Sponsor: Electrical Standards Board

In Standard Board

Metallic Coverings for Insulated Wire and Cable, Specifications for, C8.15-(Revision of C8.15-1942)

Sponsor: Electrical Standards Board

Residential Wiring Handbook, C91.1-

Sponsor: Industry Committee on Interior Wiring Design

American Standard Withdrawn

Miniature Incandescent Lamps, C78.140-1956

Sponsor: Electrical Standards Board

Project Initiated

External Withstand Test Voltages, C92

Sponsors: American Institute of Electrical Engineers; National Electrical Manufacturers Association

Scope: To study problems of coordination of insulation strengths of the different types of apparatus used in electrical systems.

To develop coordinated minimum values for the external dielectric requirements of outdoor apparatus for power transmission and distribution, as follows:

a. Wet and dry low frequency withstand test levels.
b. Impulse withstand test levels.
c. Altitude correction factors.
d. Minimum creepage distance on insulation exposed to the weather.

To compile data and to prepare guiding principles for the use of Sectional Committees with respect to requirements for insulation strengths of various types of apparatus.

To assure the coordination of American and international Standards.

Project Being Considered

Coupling Capacitors, Coupling Capacitor Potential Devices, and Line Traps, C93

Proposed Sponsors: American Institute of Electrical Engineers; National Electrical Manufacturers Association

Proposed Scope: Standards, specifications, methods of test, and definitions for coupling capacitors, coupling capacitor potential devices, and line traps for electric power lines.

GAS-BURNING APPLIANCES

American Standard Published

Domestic Gas-Fired Incinerators, Approval Requirements for, Z21.6-1957 (Revision of Z21.6-1955) $1.50

Sponsor: American Gas Association

MATERIALS HANDLING

In Standards Board

55-Gallon Tight Head Universal Drum, ICC-17E, MH2.1-

55-Gallon Full Open Head Universal Drum, MH2.2-

55-Gallon Tight Head Universal Drum, ICC-5B, MH2.3-

55-Gallon Tight Head Universal Drum, ICC-17C, MH2.4-

55-Gallon Full Open Head Universal Drum, ICC-17H, MH2.5-

30-Gallon Tight Head Universal Drum, ICC-17E, MH2.6-

16-Gallon Tight Head Universal Drum, MH.2.7-

16-Gallon Full Open Head Lug Cover Universal Drum, MH2.8-

5-Gallon Tight Head Universal Drum, ICC-17E, MH2.9-

5-Gallon Lug Cover Universal Pail, MH-2.10-

Sponsor: Steel Shipping Container Institute

Project Initiated

Sizes of Shipping Containers

Sponsors: American Material Handling Society; American Society of Mechanical Engineers

Scope: Standardization of sizes of pallet containers, cargo containers, and van containers for integrated transportation.

MATERIALS AND TESTING

American Standards Published

Zinc-Coated (Galvanized) Iron or Steel Farm-Field and Railroad Right-of-Way Fencing, Specifications for, ASTM A 116-57; ASA G8.9-1958 (Revision of ASTM A 116-48; ASA G8.9-1948) $0.30

Zinc-Coated (Galvanized) Steel Barbed Wire, Specifications for, ASTM A 121-57; ASA G8.10-1958 (Revision of ASTM A 121-48; ASA G8.10-1948) $0.30

Sponsor: American Society for Testing Materials

MECHANICAL

American Standard Published

Machine Pins, B5.20-1958 (Revision of B5.20-1954) $1.00

Sponsors: American Society of Mechanical Engineers; National Machine Tool Builders' Association; Society of Automotive Engineers; Metal Cutting Tool Institute; American Society of Tool Engineers

American Standard Approved

Mounting Dimensions of Lubricating and Coolant Pumps for Machine Tools, B5.28-1958 (Revision of B5.28-1952)

Sponsors: American Society of Tool Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers; American Society of Mechanical Engineers

In Board of Review

Evaluating Static and Dynamic Load Ratings for Ball and Roller Bearings, Method of, B3.11-

Sponsor: Mechanical Standards Board

Reaffirmation Being Considered

High-Strength High-Temperature Internal Wrenching Bolts, B18.8-1950

Sponsors: American Society of Mechan-

ical Engineers; Society of Automotive Engineers

MINING

American Standard Published

Construction and Maintenance of Rail Haulage Roads in Coal Mines, M7.3-1958 $0.75
Sponsor: American Mining Congress

Withdrawal Being Considered

Use of Explosives in Bituminous Coal Mines, Recommended Practice for, M14-1930
Sponsor: Mine Inspectors Institute of America

Coal Mine Transportation, Safety Code for, M15-1931

Underground Transportation in Metal Mines, M18-1928
Sponsor: American Mining Congress

PHOTOGRAPHY

American Standards Published

Photographic Films for Permanent Records, Specifications for, PH1-28.1957 (Revision of Z38.3.2-1945) $0.50
Sponsor: Photographic Standards Board

Photographic Thermometers, PH4.7-1958 (Revision of PH4.7-1956) $0.25

Photographic Laboratory Spring-Driven Timers, Specifications for, PH4.25-1958 $0.25
Sponsor: Photographic Standards Board

In Board of Review

Focal Lengths and Markings of 35mm Motion-Picture Projection Lenses, PH22.28- (Revision of Z22.28-1946)

Dimensions for 35mm Motion-Picture Film Perforated 32mm, 2R-2994, PH22.73- (Revision of PH22.73-1951)

100-Mil Magnetic Coating on 16mm Film, Perforated One Edge, PH22.87- (Revision of PH22.87-1953)

Scene-Change Cueing for Printing 16mm Motion-Picture Film, PH22.89-

Four Magnetic Sound Records on 35mm Film, PH22.108-

Picture and Sound Apertures for Continuous Contact Printers for 35 mm Release Prints with Photographic Sound, PH22.11-

Picture-Sound Separation in 16mm Magnetic Sound Projectors, PH22.112-
Sponsor: Society of Motion Picture and Television Engineers

In Standards Board

Curl of Photographic Film, Methods for Determining the, PH1.29-

Film in Rolls for Recording Instruments, Graphic Arts, Photo Typesetting, Portrait, X-ray and Related Use, Dimensions for, PH1.30-
Sponsor: Photographic Standards Board

Sensitometric Exposure of Daylight-Type Color Films, PH2.11-
Sponsor: Photographic Standards Board

Sulfuric Acid, Specifications for Photographic Grade, PH4.101- (Revision of Z38.8.101-1949)

Citric Acid, Monohydrate, Specifications for Photographic Grade, PH4.102- (Revision of Z38.8.102-1949)

Boric Acid, Crystalline, Specifications for Photographic Grade, PH4.103- (Revision of Z38.8.103-1949)

Hydrochloric Acid, Specifications for Photographic Grade, PH4.104- (Revision of Z38.8.104-1949)

Catechol, Specifications for Photographic Grade, PH4.131- (Revision of Z38.8.-131-1948)

Formaldehyde, Specifications for Photographic Grade; 37-Percent Solution, PH4.152- (Revision of Z38.8.152-1949)

Sodium Sulfate, Anhydrous, Specifications for Photographic Grade, PH4.175- (Revision of Z38.8.175-1949)

Sodium Bisulfite, Anhydrous, Specifications for Photographic Grade, PH4.276- (Revision of Z38.8.276-1949)
Sponsor: Photographic Standards Board

PIPE AND FITTINGS

American Standards Published

Electric-Fusion Welded Steel Pipe for High Temperature Service, Specifications for, ASTM A 155-56T; ASA B36.11-1958 (Revision of ASTM A 155-55; ASA B36.11-1956) $0.30

Seamless Steel Boiler Tubes, Specifications for, ASTM A 83-56T; ASA B36.12-1958 (Revision of ASTM A 83-55T; ASA B36.12-1956) $0.30

Electric-Resistance-Welded Steel and Open-Hearth Iron Boiler Tubes, ASTM A 178-56T; ASA B36.13-1958 (Revision of ASTM A 178-55T; ASA B36.13-1956) $0.30

Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes, ASTM A 179-56T; ASA B36.28-1958 (Revision of ASTM A 179-55; ASA B36.28-1956) $0.30

Seamless Cold-Drawn Intermediate Alloy-Steel Heat-Exchanger and Condenser Tubes, ASTM A 199-56T; ASA B36.29-1958 (Revision of ASTM A 199-55; ASA B36.29-1956) $0.30
Sponsor: American Society for Testing Materials

In Standards Board

Steel Butt-Welding Fittings, B16.9- (Revision of B16.9-1951)
Sponsors: American Society of Mechanical Engineers; Mechanical Contractors Association of America; Manufacturers Standardization Society of the Valve and Fittings Industry

Reaffirmation Approved

Malleable-Iron Screwed Fittings, 150 lb, B16.3-1951 (R1958)

Malleable-Iron Screwed Fittings, 300 lb, B16.19-1951 (R1958)
Sponsors: American Society of Mechanical Engineers; Mechanical Contractors Association of America; Manufacturers Standardization Society of the Valve and Fittings Industry

RUBBER INDUSTRY

American Standard Published

Sample Preparation for Physical Testing of Rubber Products, Tentative Methods of, ASTM D 15-57T; ASA J1.1-1958 (Revision of ASTM D 15-55T; ASA J1.1-1956) $0.30
Sponsor: American Society for Testing Materials

SAFETY

American Standard Published

Safety in Welding and Cutting, Z49.1-1958 (Revision of Z49.1-1950) $2.00
Sponsor: American Welding Society

New Standards for Women's Clothing Sizes

American women who have been buying their ready-to-wear by a variety of size designations will now be able to buy sweaters, knitted dresses, swimwear, and T-shirts by the same size designations as are used on their dresses, the U.S. Department of Commerce has announced. This will result from a system of sizes adopted by the women's branch of the knitted outerwear and swimwear industry, and now issued as Commercial Standard CS215-58 by the Commodity Standards Division of the Department.

This step was made possible by a study of the dimensions of thousands of women, and the interpretation and application of the statistical results to the sizing of knitted outerwear and swimwear. The study was initiated by distributors of ready-to-wear apparel and coordinated by the Commodity Standards Division.

The project was undertaken with the cooperation of the National Knitted Outerwear Association, and manufacturers representing more than two-thirds of the industry have already approved the plan. They are expected to start making it effective in the latter part of this year.

As examples of the variety of size designations now in use a woman will buy a size 12 dress, a size 34 or 36 sweater, a "Medium" T-shirt, and a bathing suit by "dress" or "bust" sizes, including the dual marking 12/34.

The planned simplification in the sizing of women's apparel is due to two factors, the Commodity Standards Division explains:

1. The development, through research, of the body-measurement standard, CS215-58, or its earlier working number TS-5200A.
2. The interest of the knitted outerwear industry in desiring to apply that standard to its products. This group of manufacturers is the first in the field of women's apparel to adopt the standard as a basis for their own product sizing.

The Commodity Standards Division explains:

"Commercial Standard CS215-58 is a unique document in that it is the first of its kind to provide definitions of size for all the major ready-to-wear classifications—Misses', Juniors', Women's, and Half-sizes—in

terms of body measurements, adjusted to compensate for the effect of foundation garments. In other words, the standard gives measurements of women clothed in their foundation garments. Without such a standard, the coordination of the sizing of the wide variety of garments worn by women would not be a possibility.

"Further, CS215-58 provides new data on the sizing or grading of patterns for women's ready-to-wear. It indicates clearly, for example, that the size-to-size relationships between bust, waist, and hips are not always parallel as have been commonly assumed. The waist develops less rapidly than the bust or hips on the smallest sizes and more rapidly than bust or hips on the largest sizes. These findings are important, for they point the way towards fitting *more women better* with ready-to-wear."

Cooperating with the Commodity Standards Division in the development of the sizing standard were the following Government and private industry organizations:

1. The U.S. Department of Agriculture, Institute of Home Economics
2. The National Bureau of Standards, Applied Mathematics Division
3. The Headquarters Quartermaster Research and Development Command, Textile, Clothing and Footwear Division
4. The Corset and Brassiere Association of America
5. The Mail Order Association of America, the proponent group

The standard becomes effective July 1, 1958, and will be issued in printed form for sale by the Superintendent of Documents. Pending completion of the printing, copies of the recommended standard may be obtained, as long as they last, from the Commodity Standards Division, Office of Technical Services, U.S. Department of Commerce, Washington 25, D. C.

As if wanting to end their career in a last dazzling display of beauty and performance, sailing ships achieved their greatest perfection at the end of the 19th century, shortly before steamships replaced them for all time for all practical purposes. In the 1880's more sailing vessels sailed the Seven Seas than at any time in history, and many of them were the largest and fastest ever built.

One of the very few survivors of this glorious period is the barque "Balclutha," now tied up at a San Francisco pier for the benefit of sightseers. The iron-hulled vessel was built in England in 1886 to be used in the grain trade between the West Coast and Europe. As an illustration of the standardized perfection of the vessel's rigging, a tablet on deck explains that each of the 125 ropes in the running rigging was made fast to its own particular belaying pin. This formula never varied from ship to ship, and it enabled a sailor on each new ship to find the right rope immediately no matter how dark the night (and, it may be assumed, no matter how many rums he had partaken of ashore).

A similar degree of standardization in shipbuilding was achieved during World War II with the 2,700 Liberty cargo ships. These ships were built in many different yards, but identical standard construction drawings were used at each yard, and identical ships resulted. Because of such standards, these ships were built much faster and at lower cost than would otherwise have been possible. Moreover, a crew could transfer from one Liberty ship to another, and each crew member could find in the dark, without the slightest delay, his bunk and station of duty.

These two examples show the benefits of standards in building and operating ships—or any other means of transportation. The one standard was government-directed in the emergency of a war, the other developed by private initiative and cooperation in an effort to achieve greatest efficiency.

Today, the U.S. Navy is still carrying on one of the most active standardization programs of all government departments. But in the civilian fields of transportation there are many areas where standardization falls far short of the perfection achieved by the sailing vessels of the late 1800's.

WHAT'S NEW ON AMERICAN STANDARDS PROJECTS

Methods of Recording and Measuring Motor Transportation Accident Experience, D15—

Sponsors: National Safety Council; American Trucking Association

Van Court Lucas, administrative assistant, American Transit Association, New York, has been appointed

Van Court Lucas

chairman of the newly organized Sectional Committee D15. Regarding the significance of the committee's work to be undertaken, Mr Lucas states:

"There definitely appears to be a need for some common denominators that can be used as guides in the recording and measuring of motor vehicle fleet accident experience. Although there are some excellent procedures already developed by various organizations which will be a tremendous help to the committee, there are enough differences among them to indicate that we may not all be talking about the same things when we discuss accidents and their statistical treatment. The committee hopes to develop a workable procedure that we all can use without making radical changes from the practices we have been following in the past. From the interest and spirit of cooperation that were evident at the organization meeting of the committee on January 9, I feel that we have every chance for success in our project."

Mr Lucas graduated from Yale University in 1928 with a B.S. degree in Civil Engineering and Building Construction and has since held positions with the Thompson-Starrett Co and the Connecticut Railway and Lighting Co. He joined the American Transit Association in 1939. He is a member of committees of the National Fire Protection Association and the National Safety Council.

Paul H. Coburn, director, Motor Transport Division, National Safety Council, is secretary of Sectional Committee D15. A graduate of Johns Hopkins University, he has had experience in personnel research and administration with the Division of Standards and Research, U.S. Department of Labor, as well as in safety engineering in the insurance business. During the war Mr Coburn was engaged in transportation and industrial accident prevention in the war industries of the Gulf Coast area. He joined the staff of the National Safety Council in 1943 as a fleet safety engineer and became director of the Motor Transportation Division in 1951. He is a member of the American Society of Safety Engineers. Mr Coburn has also served as

Paul H. Coburn

an Instructor in Fleet Supervisor Training Courses, the National Institutes for Traffic Training, and at the Northwestern Traffic Institute.

"Having more than 1,500 'bosses' in the form of truck, bus, and taxicab companies in 48 states and Canada," Mr Coburn says, "I naturally consider myself an 'employee' of the motor transportation industry."

Code for Pressure Piping, B31—

Sponsor: American Society of Mechanical Engineers

Interpretation submitted by the sponsor.

From time to time actions taken by Sectional Committee B31 are published for the information of all who are interested in use of the American Standard Code for Pressure Piping, B31.1-1955. While these actions do not constitute formal revision of the Code, they may be utilized in specifications, or otherwise, as representing the considered opinion of the committee.

Case No. 32 is published below as interim action of Sectional Committee B31 on the Code for Pressure Piping, but will not constitute a part of the Code until formal action has been taken by the American Society of Mechanical Engineers as sponsor and by the American Standards Association on approval of a revised edition.

Case No. 31 was published in the February 1958 issue of THE MAGAZINE OF STANDARDS. Case No. 30, was published in the April issue.

CASE 32

Inquiry: Is the use of centrifugally cast steel pipe permissible under Section 3 of American Standard B31.1-1955, Code of Pressure Piping?

Reply: It is the opinion of the committee that centrifugally cast steel pipe is suitable for use in piping systems under Section 3 of American Standard B31.1-1955, Code for Pressure Piping, if the following requirements are met:

1. The pipe shall meet the requirements of ASTM Specifications A-216, A-217, or A-351, except that

CASE 32—PART 1

Maximum Allowable Stress Values in Tension for Centrifugally Cast Steel Pipe, PSI

Material and Specification Number	Grade	Spec. Min. Tensile	Spec. Min. Yield	For Metal Temperatures Not Exceeding Deg F									
				−20 to 100	200	300	400	500	600	650	700	750	800
Carbon Steels													
A216	WCA	60000	30000	16900	16400	15800	15200	14650	13500	13500	12900	11650	9700
	WCB	70000	36000	20250	19500	18750	18000	17250	16500	15750	14950	13300	10800
Low-Alloy Steels													
A217	WC1	65000	35000	19500	18700	17900	17100	16250	15450	14650	14650	14650	14100
	WC4	70000	40000	21000	20150	19250	18400	17500	16650	15750	15750	15750	15300
	WC5	70000	40000	21000	20150	19250	18400	17500	16650	15750	15750	15750	15300
	WC6	70000	40000	21000	20150	19250	18400	17500	16650	15750	15750	15750	15300
	WC9	70000	40000	21000	20150	19250	18400	17500	16650	15750	15750	15750	15300
	C5	90000	60000	27000	25900	24750	23650	22500	21400	20250	19450	18350	17100
	C12	90000	60000	27000	25900	24750	23650	22500	21400	20250	19800	18900	17450
High-Alloy Steels													
A351	CA15	90000	65000	27000	25700	24450	23200	21950	20700	19450	18650	17650	16500
	CF8	70000	28000	15750	14850	13950	13050	12150	11250	10350	10150	10000	9800
	CF8M	70000	30000	16900	16350	15800	15200	14640	14100	13500	13250	12900	12600
	CF8C	70000	30000	16900	15850	14800	13800	12750	11750	10700	10550	10450	10350
	CH20	70000	30000	16900	16250	15600	14950	14300	13600	12950	12900	12850	12750
	CK20	65000	28000	15800	15350	14850	14400	13900	13450	12950	12900	12850	12750

Note: The above stress values include a casting quality factor of 90 per cent.

CASE 32—Part 2

Maximum Allowable Stress Values in Tension for Centrifugally Cast Steel Pipe, PSI

For Metal Temperature Not Exceeding Deg F

850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
7800	5850	4050	2250										
8350	5850	4050	2250										
12950	11250	9000	5650										
14200	12600	9000	4650										
14200	12600	9900	7000	4950	3600								
14200	12600	9900	7000	4950	3600								
14200	12600	9900	7000	5200	3800	2700	1800						
15300	12250	9000	6600	4700	3000	2000	1350						
15600	13500	10600	7650	4950	3000	2000	1350						
14400	9900	6850	4500	3000	2000	1350	900						
9600	9350	9100	8850	8650	6750	5200	4050	2950	2200	1600	1250	900	700
12150	11700	11100	10550	9550	8450	7200	6100	4750	3600	2700	2100	1650	1350
10200	10100	10000	9900	9800	9700	7200	4500	3250	2450	1800	1400	1100	900
12500	12150	11250	9450	7650	5850	4500	3400	2600	2100	1600	1150	800	700
12500	12150	11250	9900	8800	7650	6550	5400	4300	3150	2100	1450	1000	700

the hydrostatic test shall be as specified in Paragraph 6 of this case.

2. The pipe shall have both the inner and outer surfaces machined to a finish not coarser than 250 rms after heat treatment.

3. Each pipe after machining shall be examined on the inside and outside surfaces including ends by magnetic particle inspection or liquid penetrant method of surface inspection whichever is feasible for the material.

When magnetic particle inspection is used it shall be made in accordance with ASTM E-109 and defects revealed shall be repaired.

When the liquid penetrant method is used, any crack-like defects revealed shall be repaired.

4. Each piece of ferritic alloy pipe having wall thickness greater than 1 inch shall be ultrasonically tested throughout its length after machining to determine its soundness by either the shear or longitudinal methods. Defects in excess of 5 percent of the wall thickness shall not be permitted.

5. Austenitic castings are not amenable to ultrasonic inspection. Where specified on the purchase order, pipe may be partially or completely radiographed. Pipe showing defects as judged by the Industrial Radiographic Standards for Steel Castings (ASTM E71, Cl. II) shall be repaired.

6. Each length of pipe, after machining, shall be tested by the manufacturer to a hydrostatic test pressure which will produce in the pipe, at room temperature, a stress of 90 percent of the specified minimum yield strength. This pressure shall be determined by the formula,

$$P = \frac{2\,s\,t}{D}$$

where:

P = minimum hydrostatic test pressure (pounds per square inch)

s = 90 percent of the specified minimum yield point

t = actual wall thickness

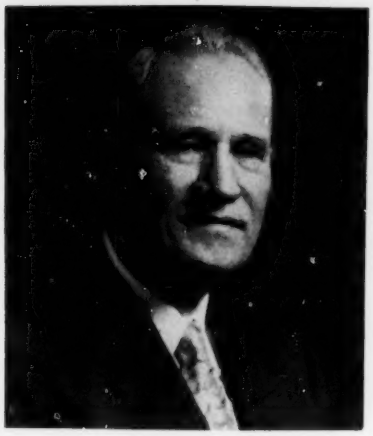
D = outside diameter of the pipe

The test shall be maintained for not less than five (5) minutes.

7. Flattening test on pipe intended for bending or forming shall be made in accordance with Paragraph S 3 of ASTM A 362.

8. Minimum wall thickness of the casting shall be determined by the same formulas as those governing wall thickness of wrought steel pipe except that the permissible stress values shall be as shown in the appended table.

9. The foregoing requirements establish interim provisions until such time as further ASTM Specifications on Centrifugally Cast Pipe, which the committee understands are in preparation, become available and are accepted by this committee.



by **Cyril Ainsworth**

DINNSA

(Does Industry Need a National Standards Agency?)

Mr Ainsworth has served for many years as Technical Director of the American Standards Association. He is now Deputy Managing Director and Assistant Secretary.

THE RELATIONSHIP of government to national standardization has been discussed in the January and April columns. First it was mentioned that government needs a national standardization agency as much as industry does. Last month it was indicated the Federal Government should not control the correlation of standardization work but should have a partnership with industry and technology, operating in the public good.

Government's fundamental concern with national standardization stems from several basic premises.

(a) Government is a consumer and needs standards on which to purchase commodities the same as any company or corporation. Only in a limited number of instances are the commodities different from those purchased by industry and the ultimate consumer. Congress recognized the need for correlation with nationally recognized standards by the passage of Public Law 436. Directions based on this principle have been issued by departments.

(b) Government promulgates rules and regulations with which industry and the public must comply. When such regulations are based on standards developed nationally through the cooperation of all the groups substantially concerned, government is assured of simplified enforcement and a degree of technical competency in its regulations difficult to challenge.

(c) Since the ultimate consumer cannot be organized effectively for participation in standardization and has little technical competency, government assumes the position of protector and agent of the public.

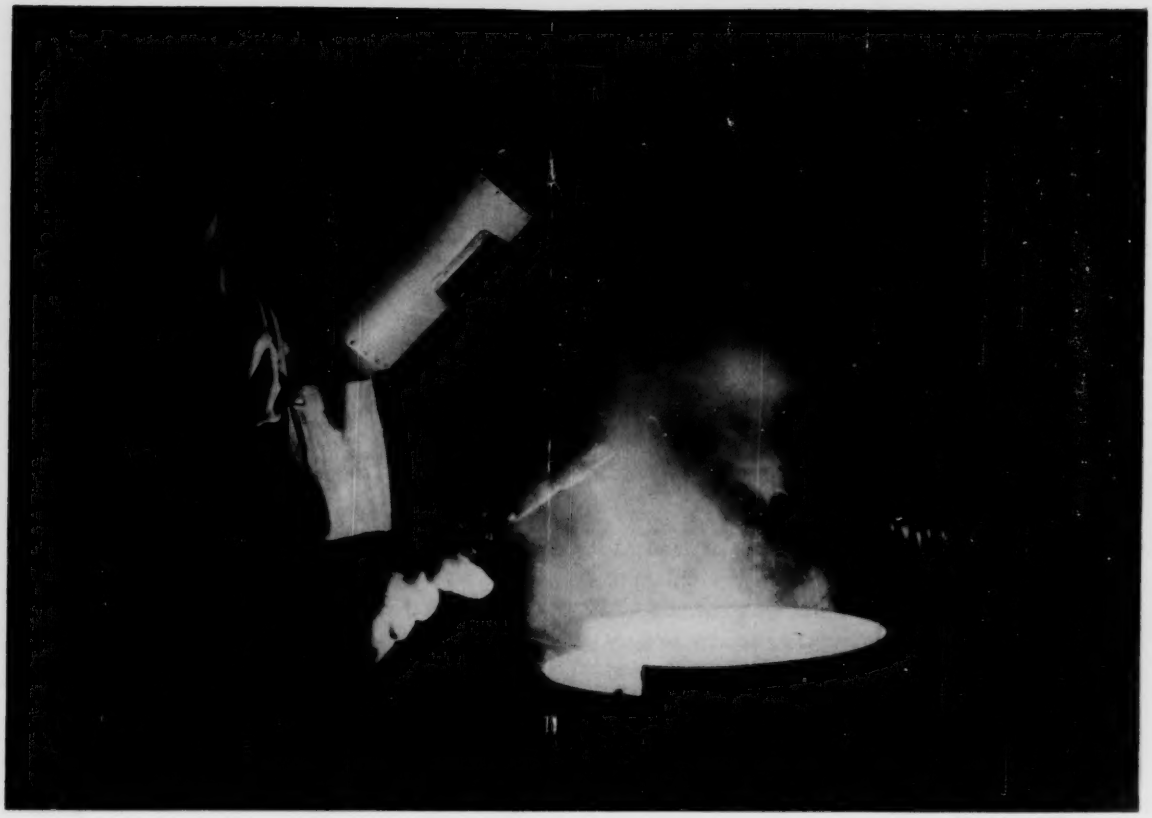
(d) Through its facilities for economic studies and technical research paid for by taxation, government has information essential to the advancement of the national economy. It can best be made available through translation in the form of national standards.

These concepts are reasons why government is concerned with the nationally recognized standards of technical organizations as well as those approved by ASA as American Standard. However, there is a vast amount of standardization work in industry in which government may have interest and which can only attain national acceptance through the clearinghouse operations of the national standards body. ASA in this capacity serves government as well as the industries which sell to it and the public, and which it regulates.

It is not enough for government to look at the list of industry standards and use what it finds of value. If it can't find what it wants, it should request development of the standards it needs and thereby obtain maximum efficiency in its operations.

The safety standards program is an important example of the value of a national standards body to government, and of the recognition accorded ASA's coordinating operations thereby. Those concerned with this program believe that it could not when initiated, and cannot now, be handled by any one technical or trade association or governmental agency. The need for coordination of the views of many national groups is so great in an activity involving the saving of human lives that only a national organization whose primary function is that of coordination and correlation could possibly succeed in bringing together the groups concerned for the development of safety standards that are authoritative.

When the safety standards program was started in 1920, a survey by the National Safety Council indicated a hodgepodge of conflicting rules, regulations, orders, and safe practice recommendations in use throughout the country. From a regulatory point of view alone and because of the support of the state regulatory bodies, American Standards form the backbone of governmental rules and regulations. The confidence that public officials have had in the coordination processes of ASA has made this degree of harmony possible.



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- Specific recommendations cover installation and operation of equipment for welding, shielded metal-arc welding, submerged arc welding, inert-gas metal-arc welding, brazing and resistance welding. These standard requirements are generally applicable to all welding processes shown in the American Welding Society's Master Chart (AWS A3.1-49).
- A comprehensive bibliography refers to other data of special interest in meeting these standard requirements.

American Standard Z49.1-1958 was prepared by ASA Sectional Committee Z49, Safety in Electric and Gas Welding and Cutting Operations. *Sponsor:* American Welding Society.

. . . consult American Standard Z49.1-1958 — $2.00

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